The book by Harrington,
The observations
by Hill.

Henry Aldrich (b.1647-d.171[illegible]
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ARTIS LOGICÆ

RUDIMENTA.

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RUDIMENTA.

WITH

ILLUSTRATIVE OBSERVATIONS

ON EACH SECTION.

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ARTIS LOGICÆ

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CAP. I.

DE TERMINIS SIMPLICIBUS.

§. 1. *De Mentis Operationibus.*

MENTIS operationes ad ratiocinandum adhibitæ tres sunt. 1. *Simplex Apprehensio.* 2. *Judicium.* 3. *Ratiocinium.*

The office of Logic is the developement of the natural process of the human mind in the act of reasoning. It has therefore a close alliance with that branch of Metaphysics which relates to the faculties and operations of the mind. These faculties indeed, and their respective operations, are so diversified, that the enumeration of them might be carried to an almost unlimited extent. But, if not all, those at least with which Logic is connected, may be reduced to these three classes, *Simple Apprehension, Judgment,* and *Reasoning.* The act of *Reasoning* is, in fact, the subject-matter of Logic; and to this the exercise of the other two operations are subordinate.

Each of these words, *Simple Apprehension, Judgment, Reasoning,* is employed to denote the *faculty* or power of the mind; the *operation* or exercise of that faculty; and the *result* of that operation.

1. *Simplex Apprehensio,* est nudus rei conceptus intellectivus, similis quodammodo perceptioni sensitivæ; sicût enim *imago* rei est in oculo, ita *idea* in animo: estque *Incomplexa* vel *Complexa.*

Simple Apprehension is defined, "The mere intellectual conception of a thing."

The *faculty* of Simple Apprehension is that by which the mind either discerns its own sensations and actings; or perceives the objects which present themselves to its notice through the medium of the natural senses; or recals and employs the notions of past sensations or absent objects.

The *operation* of this primary faculty is called *perception,* or *conception.* Or, if greater accuracy is required, the terms *consciousness, perception,* and *conception,* may be respectively applied to the distinct modes of operation above described.

The *result* of the operation of this faculty on any particular object is denominated, properly, a *notion,* and metaphorically, an *impression,* a *conception* or *perception,* an *idea* or *form,* an *image* or *representation.*

These figurative terms are borrowed from sensitive perception, in consequence of a supposed analogy between mental apprehension and the effects of natural objects on the bodily senses; especially on those of feeling and sight. This imaginary similitude however seems to be inconsistent with correct metaphysical principles. It is not easy to attach a definite sense to that mode of speaking which assumes that any kind of form or picture of material objects can be traced on an immaterial substance; or that it is possible to produce a representation or image of mere qualities or attributes, as, *virtue, heat, propensity.* The mind *apprehends* the abstract

language of the mathematician, when he asserts that $x+y=a$; or of the lawyer, when he puts the case, that *A. B. is indebted to C. D.* But there cannot exist in these acts of apprehension any thing really analogous to the effect of sensible objects on the sight or feeling. In fact, the mode in which the mind is primarily acted upon appears to be an incomprehensible mystery.

Apprehensio simplex Incomplexa, est unius objecti, ut *calami*; vel etiam plurium, confuse, ut *calami, manûs*, &c. *Complexa*, plurium, sed cum ordine quodam et respectu; ut *calami in manu*.

The term, *Incomplex Simple Apprehension*, taken in its metaphysical and proper sense, denotes a pure, uncompounded, and consequently indivisible notion or conception; as, *essence, hardness, extension, colour*. *Complex Simple Apprehension*, metaphysically understood, denotes every combined or divisible notion; as that of *Man*, which may be reduced to the simpler notions of *animality*, and *rationality*: *Table*, including the notions of the *material*, the *form*, the *use*, &c. *Gratitude*, which comprehends the notions of a *benefactor*, a *recipient*, *benefits conferred*, the *remembrance* of those benefits, the *love* or *esteem* excited by them, &c.

But for the purposes of Logic, it is not unusual, (although decidedly inaccurate,) to call those apprehensions *incomplex* which are expressed by a single word. Such are the notions denoted by the following examples: *Time, invaluableness, treasure, revenge, kind, wildness, justice, relation or property* (implied in the particle *of*), *individuality* (implied by *the*). Each of these words represents an *incomplex simple*

Apprehension, according to the more vague use of that expression: although, in truth, most of the notions which they denote are *complex*.

When words are so combined as to create a grammatical relation or dependence, they are representatives of *Complex Apprehensions*: as; *That invaluable treasure, time. That wild kind of justice called revenge. The possession of power to suspend the prosecution of our desires.*

Thus also, the faculty by which we comprehend the meaning of whole sentences, or of series of sentences to any extent, is *Complex simple Apprehension.* Under the same term are likewise included the mental powers and operations of attention, imagination, memory, anticipation, association, abstraction, generalization, arrangement, &c.

2. *Judicium*, est quo mens non solum percipit duo objecta, sed apud se pronuntiat, illa inter se convenire aut dissidere. Atque hoc determinando differt Judicium ab Apprehensione complexâ.

Est enim Judicium aliud *Affirmativum*, aliud *Negativum*.

E. g. Si quis dixerit *Triangulum æquilaterum esse æquiangulum*, possum *Apprehensione simplici Incomplexâ* intelligere quid sibi velint singula orationis hujus vocabula, *Complexâ* vero quid tota sibi velit oratio: Quin et ipsius naturæ lumine intelligo, duo quælibet objecta vel inter se convenire, vel non convenire: Nondum tamen feci judicium donec apud meipsum statuerim hæc duo objecta, *Triangulum æquilate-*

rum, et *Triangulum æquiangulum*, inter se convenire.

By the operation of *Judgment* the intellectual faculty compares any two objects, and decides on their mutual agreement or disagreement. That is; the mind *judges* either that its notion of one object *comprehends* the notion of another object, or that the one is *unconnected* with the other. Or, in other words, it decides that the latter is a quality or attribute which belongs or does not belong to the former. Thus, the judgment expressed by the sentence, *All faith is assent,* implies that the notion expressed by the word *assent* is involved in the notion of *faith*; or that *assent* is a quality attached to *faith*. Hence it is said, (by a vague and inaccurate figure,) that *assent* agrees with *faith*. Again, the judgment expressed by the sentence, *whales are not fishes*, consists in the mental decision that the quality denoted by *fish* is not attached to *whales:* or that the notion or apprehension expressed by the word *whale* does not include the notion represented by the word *fish*. These two objects are therefore technically said to differ from each other.

The simple act of understanding the sense intended to be conveyed by any assertion, whether affirmative or negative, is the office of *Apprehension*. The acquiescence or non-acquiescence of the mind in that assertion is an exercise of *Judgment*.

The trains of thought which are expressed by the following sentences, afford examples of Judgment:

Time is an invaluable treasure.
Revenge is a kind of wild justice.
That which is past and gone is irrecoverable.
It is the glory of a man to pass by an offence.
Minerals are inorganic bodies.
Minerals are not organized bodies.
He that goeth about to persuade a multitude that

they are not so well governed as they ought to be, shall never want attentive and favourable hearers.

The path to bliss abounds with many a snare.

Omne ignotum pro mirifico est.

3. Ratiocinium est progressus mentis ab uno Judicio ad aliud.

Reasoning consists in the comparison of judgments in which the mind has previously acquiesced, and in deducing from them a new and distinct judgment.

When, for example, we infer the immortality of the soul from its immateriality, the mind first acquiesces in the judgment that *Every thing immaterial is immortal.* It then assumes that *The soul is immaterial.* Whence it proceeds to the third judgment, namely, that *The soul is immortal.*

Again, if this judgment has been previously formed, that *Any institution which has a direct tendency to prevent contests is advantageous to men*; and this also, that *The institution of property has a direct tendency to prevent contests;* the very juxtaposition of these judgments will, as it were, compel the mind to advance to a further judgment, namely, that *The institution of property is advantageous to men.*

The sentence, *The institution of property is advantageous; because it increases the produce of the earth; it preserves the produce of the earth to maturity: it prevents contests; and it improves the conveniency of living;* contains four such acts of reasoning.

No element is liable to decomposition; Water is liable to decomposition; Therefore water is not an element.

Whatever makes a man most effectually superior to his enemies confers genuine glory; But the disposition to pardon their injuries makes him most effectually

superior to them; Such a disposition therefore confers genuine glory.

It is an undeniable truth, that it is the glory of a man to pass by an offence; for the wisest of men asserts it to be so.

Singulis operationibus sui accidunt defectus: Apprehensioni, *Indistinctio;* Judicio, *Falsitas;* Ratiocinio, *Mendosa Collectio.*

1. There are innumerable objects of which our *notions* or *apprehensions* must, from the weakness of our nature, be *necessarily indistinct.* Such, for instance, are our conceptions of the *Divine Being,* and of all his attributes, *Infinity, Omnipotence, Omniscience, Perfection,* &c. The apprehensions we form of *Heaven,* of *Angels,* of the *Human Soul,* of the *Operations of our own minds,* are necessarily *indistinct.*

In numberless other instances our ideas are *accidentally indistinct;* that is, not from any *inherent* defect, but from the want of an actual acquaintance with the object, arising from the deficiency either of opportunity or of observation. Thus an uninstructed person forms an inaccurate conception of the nature and use of *philosophy:* A native of the torrid zone has an indistinct apprehension of *ice:* The ancients had no correct notion of an *eclipse.* Of those objects with which we are familiar we form ideas proportionately *less indistinct;* but there exist probably very few things, the nature of which we can be said, strictly speaking, to comprehend *distinctly.*

2. Nor is the faculty of *judgment* free from imperfection. It is misled by *sense* in the rustic who conceives that *The earth is stationary:* or that *The sun rises out of the sea.* It is unduly influenced by *authority and example* in those who conceive that

Earth, air, fire, and water, are simple elements; and in the illiterate mechanic, who judges that *All which some factious demagogue says must be true:* and that *Whatever Government does must be wrong.* It is often perverted by the *passions;* as when men decide that *The Gospel consists in the repeal of the obligation of the moral law;* that *Honesty is the whole of religion;* that *Pride is noble;* that *Revenge is a branch of justice.* The Lycaonians at Lystra were guilty of a false judgment, when they said of Paul and Barnabas, *The Gods are come down to us in the likeness of men.* So also were the Pharisees, when they said of our blessed Lord, *We know that this man is a sinner.*

3. The powers of *reasoning* are likewise imperfect. The defect in this faculty manifests itself when a conclusion is supposed to be derived from judgments or principles on which it has no real dependence. Thus in the apparent argument, *Kings deserve honour; but subjects are not kings; therefore subjects do not deserve honour;* the two introductory judgments are correct: but it does not follow from them that *none but kings* deserve honour, and consequently that *subjects do not* deserve honour. Again, in this form of reasoning; *Severe punishments are requisite to suppress the progress of crime; now capital punishments are undoubtedly severe; these therefore are requisite for that purpose;* the judgments which form the basis of the argument are correct; but they comprehend nothing which authorizes the inference professedly deduced from them, because they do not prove that the particular kind of severe punishments specified belongs to that class of severe punishments which are requisite for the suppression of vice. The last judgment therefore may, so far as depends on the others, be either correct or incorrect.

It is not unusual for the mind to find itself bewildered by such arguments; while it feels their insufficiency, but is unable to discover where the

error lies. One important purpose of Logic is, by analysing the mental process, and by classifying the various occasions of error in the mode of deducing inferences, to afford a facility in detecting fallacies.

It may be further observed, (although the observation does not immediately belong to this branch of the subject,) that if the previous judgments on which an argument depends, or either of them, be inaccurate, while the reasoning process is carried on correctly, the new judgment deduced from them will probably, but not necessarily, be erroneous. If from the principles, *Singularity ought by all means to be avoided, To continue sober in a company of drunkards is singularity*, it is inferred that, *To continue sober in a company of drunkards ought by all means to be avoided;* the argumentative process is correct; and the falsehood of the conclusion is to be attributed to the falsehood of the principle on which it is founded.

This is one of the most extensive means of the propagation of error; and it is the more effectual, because, in consequence of the elliptical mode of argument usually adopted, the unsound principle does not meet the eye or ear, but is only insinuated. This is the case in the two following examples, in which the false principle that *any measures, however unlawful, may be resorted to for the purpose of maintaining reputation or avoiding unpleasant imputations*, is implied though not expressed.

I must accept a challenge, or else I shall incur the imputation of cowardice.

Revenge is usually esteemed a mark of a noble spirit, and is therefore to be indulged in order to maintain our reputation.

Thus the Pharisees *argued* from an erroneous principle when they inferred that our blessed Saviour was *not of God, because he kept not the sabbath day* according to their traditions.

The Melitans reasoned from an inaccurate judg-

ment, when they drew the erroneous conclusion, *This stranger is about to be killed by a venomous serpent; therefore he is a murderer pursued by vengeance.* Nor were their principles more correct when, on seeing the Apostle shake off the animal without injury, they said *that he was a god.*

§. 2. *De Vocibus.*

QUONIAM vero, inter docendum et disputandum, neque res aliqua, neque conceptus, commode in medium afferri potest; necesse est vicaria utriusque signa substituere.

Hujusmodi signa apud homines recepta, sunt *Voces:* Nam *Vox* est signum rei vel conceptûs ex instituto vicarium: et in significando, primo quidem *declarat* conceptum, deinde *supponit* pro re. Dico autem *ex instituto*, quia soni inarticulati, vocesque quas natura sponte suggerit, extra artem censentur.

A *Word* may be defined, " An arbitrary and vicarious sign of a thing or of a notion."

It is *a sign;* a mark or token of the existence of some thing or of some conception intended to be expressed or represented by it.

It is a sign *of a thing;* inasmuch as it serves to represent the object which is known by that particular combination of sounds or forms. Thus the word *London,* as addressed either to the eye by symbols or to the ear by sounds, represents the city to which custom has affixed that name. The same is represented by the word, (or, grammatically speaking, the combination of words,) *The chief city of this country.*

A Word is also the sign *of a notion or conception.* The word *London,* or *The chief city of England,* intimates that the notion or conception of the thing denoted by that word exists in the mind of the speaker or writer, which he wishes to communicate to another by exciting a similar notion in *his* mind.

A Word is usually considered to be at once the sign of a thing *and* of a notion. But these may be separated. It may denote *a thing* without a corresponding *notion;* as when we repeat that which we do not understand. Or it may denote a *notion* without a corresponding *thing.* Of this character are not only words expressing mere creatures of the imagination, as, *fairy, griffin;* and those which denote negative notions, as, *privation, invisibility:* but, as will hereafter be shewn, all terms which represent abstract notions.

Again, a *Word* is a *vicarious* sign. It not only (like a painting suspended before a house of entertainment) gives information of the existence of the thing denoted; but (like a bank note) it supplies the place of that which it represents. It first *declares* the idea or notion in the mind; it then sets that idea or notion in the place of the object which excites it; treating the *notion* and the *thing* as if they were one and the same; and lastly, it is *itself* employed as a *substitute* both for the object, and for the idea which that object excites. Thus in the sentence, *London is the metropolis of England,* that is said concerning the word *London,* which is intended concerning the thing signified by that word. Thus the expression is not less philosophical than poetic, "*Quosque secans infaustum interluit Allia nomen.*" (Æn. vii. 717.)

Lastly, a *Word* is an *arbitrary* sign. It acquires its signification only from mutual compact. There is not any natural fitness in the sounds or forms which constitute any word (except in some few which are formed by imitation) to express either

the notion or the object to which that word is appropriated. Hence in different languages different words convey the same meaning; as, Ἔπος, *verbum*, *mot*, *word;* Τέλος, *finis*, *fin*, *end;* *Gaza*, θησαυρὸς, *treasure.* The same words also convey different senses; for instance, the combination of forms presented to the eye in the word *pain*, is not less adapted to convey to a Frenchman the notion of *bread*, than to excite in *our* minds the thought of *uneasiness.* The sounds composing the word *lego* form as efficient a representative of *I read* or *I cull* in Latin, as λέγω is in Greek of *I say.* For this reason also, even in the same language, different words express very nearly the same ideas; as, *pugna*, *prœlium; hostis*, *perduellis; vote*, *suffrage:* while on the contrary the same word bears different, and sometimes opposite senses; thus, *leasing*, denotes either *gleaning*, or *falsehood; to let*, signifies to *permit*, or to *hinder.*

Even words derived from imitation, as *cuckoo*, *crash*, βόμβος, *scloppus*, require the authority of custom to constitute them legitimate words.

Each language moreover possesses some words for which there are no correspondent expressions in another. Of this kind are the French word *ennui;* the Latin *colo;* the Greek λόγος, ἐκκλησιαστής· the Persian *parasang;* the English *parliament.* Such combinations of ideas can be expressed in other languages only by adopting the foreign word, or by circumlocutions, or by approximation.

Jam quæ simplicem Apprehensionem exprimit, *Vox simplex* est; quæ Judicium, *Complexa;* quæ Ratiocinium, *Decomplexa.* Nam argumentum omne resolvitur in tres *Propositiones*, sive sententias, et propositio omnis complectitur voces, non semper numero, sed sensu semper

tres; 1. *Subjectum*, sive de quo aliud dicitur 2. *Prædicatum*, sive id quod dicitur. 3. *Copulam*, quæ utrisque media intercedit. Nam Subjectum et Prædicatum quoad sensum semper extrema sunt, et vocantur ideo *Termini Propositionis*. Porro, tam particula *Est*, quæ affirmando terminorum convenientiam exprimit, quam *Non-Est*, quæ negando dissidium, appellatur *Copula*; habet et Grammatica *Conjunctiones disjunctivas*.

1. Any combination of grammatical words which represents one act of compound or complex Apprehension is logically to be considered as a *simple word*. Thus, *He that is of a proud heart; A stirrer up of strife; The single consideration of the progress of a finite spirit towards perfection; A consideration sufficient to extinguish all envy in inferior natures and all contempt in superior;* are respectively simple words.

2. The act of judgment requires the previous apprehensions of two objects: namely, a *primary* object, which is the leading subject of the thought; and the word which expresses it is denominated *the subject:* and a *secondary* object, which is to be compared with the former; the word denoting which is called the *predicate*. To these the mind adds a third act, while it decides on that connexion or absence of connexion between those two objects, which is technically called their agreement or disagreement. This third act, or exercise of judgment, is expressed by the Copula. The Substantive Verb alone, in the present tense of the indicative mood, constitutes the *affirmative Copula*. The same verb qualified by the negative adverb constitutes the *negative Copula*, which is necessary

to the expression of a negative judgment. The affirmative judgment *places together* and *unites* the two objects compared, by asserting that they agree; that is, that the notion expressed by the predicate is involved in that expressed by the subject. The negative judgment *divides* or *separates* objects from each other, by expressing a disagreement between them. Yet the verb of existence combined with the negative particle is rightly called a *Copula*, since it serves to unite in one sentence the terms which express those objects of comparison.

Consequently the form of language necessary to express the operation of judgment must consist of three simple words; which together constitute one *complex word*. Such are the following propositions; in which the subject, copula, and predicate, are separated by an obelisk; and the grammatical words which express a single complex apprehension (and which thus constitute one logical simple word) are united by hyphens.

He - that - is - of - a - proud - heart † is † a - stirrer - up - of - strife.

The - single - consideration - of - the - progress - of - a - finite - spirit - to - perfection † is † a - consideration - sufficient - to - extinguish - all - envy - in - inferior - natures - and - all - contempt - in - superior.

The - man - that - walketh - not - in - the - counsel - of - the - ungodly - nor - standeth - in - the - way - of - sinners - nor - sitteth - in - the - seat - of - the - scornful † is † blessed.

The - ways - of - wisdom † are † ways - of - pleasantness.

Pleasure - and - pain - together - with - their - causes - good - and - evil † are † the - hinges - on - which - our - passions - turn.

The Copula is often grammatically combined with a part of the Predicate. Thus, in the proposition, *The way of the wicked † shall be darkness,* the word *shall-be* not only denotes the simple

notion of the Copula, which expresses agreement, but comprehends also the notion of futurity. The proposition may be resolved thus: *The way of the wicked* † *is* † *a way which shall be darkness;* or, *a way tending to darkness.* A similar combination occurs in the following instances:

SUBJECT.	COPULA AND PREDICATE.
Litera scripta	*manet.*
A sudden question . .	*takes a man by surprise.*
A prudent man . . .	*foreseeth the evil.*
Darkness	*at his bidding fled.*

As to the sense, the Subject is always the first word in a sentence, and the Predicate the last. They are however often reversed in the actual arrangement; especially in those languages which abound in grammatical inflexions. In many languages also the Copula is frequently omitted: as,

I that region lost. Sweet is the breath of morn.

Not absolutely vain is human praise,
When human is supported by divine.

Strait is the gate, and narrow is the way, that leadeth unto life.

It is dishonest and contemptible to use equivocation.

It is expedient to treat strangers with reserve.

Finitima sunt falsa veris.

Minime sibi quisque notus est.

Una salus victis nullam sperare salutem.

Οὗτοι κράτιστοι ἕκαστα γίγνονται, οἳ ἂν ἀφέμενοι τοῦ πολλοῖς προσέχειν τὸν νοῦν, ἐπὶ ἓν ἔργον τράπωνται.

Haud mora; prosiluere omnes: ferit æthera clamor
Nauticus: adductis spumant freta versa lacertis.

Causa et radix fere omnium malorum ea una est, quod dum mentis humanæ vires falso miramur et extollimus, vera ejus auxilia non quæramus.

The apparent or grammatical subject is not always the real or logical subject. Thus in the proposition, *That desire is a state of uneasiness every one who reflects on himself will quickly discover;* the apparent subject is, *every one who reflects on himself,*

and the predicate (with the copula) is, *will quickly discover that desire is a state of uneasiness.* But the sense of the passage requires us to consider the fact, *that desire is a state of uneasiness*, to be the true subject; of which it is predicated that it *is quickly discoverable by every one who reflects on himself.* Again, in the sentence, *Parva leves mentes captant*, the grammatical subject is *parva*, and the remaining words constitute the copula and predicate. But the poet did not intend to assert concerning *trifles*, that they have a tendency to *captivate weak minds;* but rather to predicate of *weak minds*, as his subject, a liability *to be captivated by trifles*. In deciding on such propositions, the context and the general tenor of the argument must usually be our guide.

3. The process of syllogistic reasoning requires the previous operation of two judgments; from which another judgment is inferred. Hence it cannot be *fully* expressed by fewer than three sentences. Thus the argument that *The earth is spherical; because it uniformly casts a circular shadow;* involves three judgments, which if expressed will require the use of these three sentences: First, *Every substance which, in whatever position it be, casts a circular shadow, is spherical:* Then, *The earth is a substance which, in whatever position it be, casts a circular shadow:* Whence is deduced the third and concluding sentence; *The earth is spherical.* This entire process thus expressed in language is logically called a *decomplex* or doubly complex word.

Harum Vocum Usum idoneum docendo Logica mentem unâ ad bene operandum instruit. Est igitur Logica, *Ars quæ Vocibus bene utendo Argumentari docet;* ejusque partes tres sunt, 1. *de Simplici Apprehensione*, 2. *de Judicio*, 3. *de Ratiocinio;* pro operationibus mentis

quarum signa sive voces dirigit; eatenus enim singulæ cujusque operationis defectui remedium affert: Indistinctioni nempe Simplicis Apprehensionis, Falsitati Judicii, mendosæ in Ratiocinio Collectioni.

1. The operations of the mind as carried on in the process of reasoning are so closely connected with the use of the words expressing those operations, that it is scarcely possible to separate them. Until the experiment has been made by close observation of the actings of our own mind, it is difficult to believe how much the thoughts are under the influence of the language: how dependent the master is on the servant. Hence an examination into the nature and use of words assists greatly in correcting the errors to which the mental operations are subject: and Logic, while apparently confining its attention to the former, is actually the instrument of rectifying and improving the latter.

2. Logic may therefore be defined, *The Science which teaches to reason by means of the right use of words*, or, *The Art of reasoning by means of the correct use of words.* It is sometimes defined, *The Art of reasoning.* Others have defined it, *An instrumental art directing the mind in the acquisition and communication of knowledge.* These two definitions comprehend under the term *logic* the whole system of *inductive* as well as *deductive* or syllogistic reasoning: whereas the definition in the text confines the term to the syllogistic branch of reasoning. And this is more consistent with the origin of the word *logic*, as well as with the special object of this treatise.

3. Logic is both an *art* and a *science*. As it is a system of principles and rules discovered by observation and study, and laid down for the direction of others, it is a *science*. As its use consists in the practical application of those principles and rules,

it is an *art*. Viewed as that which *teaches* to reason, it has the character of a *science*: viewed as something to be *done* and not *merely to be known*; as relating to *practice*, not to *theory*; it has the character of an *art*.

Every system or practice must have a corresponding theory: every art must have a science: but when the theory or science is simply subordinate to practice, the term art is more frequently adopted, unless any particular distinction is intended. Thus we speak of the art of building, of composition, although the theories of these arts are justly denominated sciences. The Latin word *Ars* comprehends both the notions which we express by the two words, *art* and *science*.

4. Logic is not a *final* art; that is, an art the end and object of which consists in the performance itself, and which is therefore practised solely or primarily for its own sake; such as the art of playing on musical instruments, &c. On the contrary, it is (like the art of building, of warfare, or of government) an instrumental art, studied and exercised only with a view to some further object, distinct from itself. The immediate object and office of *Logic* is *to regulate the use of words*. But this is only the medium by which it fulfils its characteristic office of *assisting the mind in the art of reasoning*. And in so doing it has a still further object in view; *the direction of the mind in the acquisition and use of knowledge*.

It must however be remembered, that Logic does not profess to convey or communicate knowledge. The folly of expecting from it more than it professes has, by a natural reaction, become the occasion of the low esteem in which many hold it. It has been treated like some useful medicines, the advocates of which have so overrated their virtues as to induce the cautious to reject them as altogether worthless. Logic may exercise the mind, but it cannot supply

the place of natural faculties, or of the external material on which the faculties are to act. It is the mere tool, requiring strength and skill for its use. It may be compared to a staff, which cannot either discover the road, or convey its bearer into it: yet enables him to proceed with greater ease when he is in the right path. Nor does it afford any just objection to the utility of a system of Logic, that many are able to form accurate conceptions, to judge correctly, and to reason well, without having studied any such system: or that others, after a familiar acquaintance with the technicalities of Logic, still continue to be weak reasoners. Without such study, the latter may have been still more incompetent: with it, the former would have acquired a still greater command of their reasoning powers.

Atque hinc adeo vulgo dicitur Pars prima Logicæ versari circa *Terminos simplices,* i. e. voces simplices, Apprehensionem simplicem exprimentes: secunda circa *Propositionem,* sive Vocem complexam, quæ Judicium exprimit: tertia vero circa *Syllogismum,* sive Vocem decomplexam, quâ Ratiocinium exprimitur: v. g. *Qui est extra fortunæ potestatem est beatus. Sapiens est extra fortunæ potestatem.* Ergo, *Sapiens est beatus.*

For Logic bears upon its ultimate object, the faculties and functions of the mind, through the medium of language; which is therefore to be considered as its immediate object.

The three branches of Logic here enumerated have been slightly touched upon, by anticipation, in a preceding paragraph. A more full exposition of each follows.

§. 3. *De Nominis Divisionibus.*

PRIMA igitur pars Logicæ versatur circa *Terminos Simplices;* i. e. ejusmodi voces, quæ *solitariæ* in propositione *prædicari* vel *subjici* possunt; et vocantur ideo *Categorematicæ*, ut *homo, calamus in manu.* Quædam etiam vocabula sunt tantum *Syncategoremata*, sive compartes subjecti aut prædicati, ut *omnis, nullus;* Quædam etiam mixta, ut *semper*, i. e. omni tempore; *nemo*, i. e. nullus homo; *currit*, i. e. est currens; quo etiam modo verbum omne grammaticum resolvi potest.

Verbum igitur *Logicum* (nempe *purum*) præter Copulam nullum est: cætera ex participio et copulâ coalescunt.

1. *Simple Terms* or *Categorematic Words* are those words which may be used *alone* either as the subject or the predicate in a proposition.

A simple term therefore must be a substantive in the *nominative case;* either by itself, or constituting with its adjuncts one simple logical word. Thus in the proposition, *Nobilitas sola est atque unica virtus*, the word *virtus*, by itself, constitutes the subject; the substantive *nobilitas* with its adjuncts, (in other terms, the logical word *nobilitas-sola-atque-unica,*) constitutes the predicate. These are therefore two simple terms.

In the sentence, *Virtus est vitium fugere*, the word *vitium-fugere*, which is the subject, and the word *virtus*, which is the predicate, are both simple terms. For the subject *vitium-fugere* is truly a noun substantive in the nominative case. Again,

in the proposition, *I am happy*, the two simple terms are *I*, which is the representative of a substantive in the nominative case; and *a-happy-man*, which is implied in the elliptical form, *happy*.

2. All Adjectives and Participles are *Syncategorems;* since they can, in sense, form only a part of a subject or predicate. For they necessarily require a substantive, either expressed or understood. In the sentence, *Music is delightful*, the adjective *delightful* does not constitute the predicate. The actual term is incomplete; and should be expressed thus, *a delightful thing*. *Man is frail;* that is, *a frail being* or *creature*. *The king was astonished;* that is, *a person astonished*.

Substantives in the oblique cases are also *Syncategorems*, as, *Pecus est Melibœi;* that is, *Pecus est pecus-Melibœi*. *I yield to my superiors;* that is, *I am a-person-yielding-to-my-superiors*.

3. *Mixed words* may be formed by the combination of two syncategorems, as in the first instance given in the text: or of a categorem and a syncategorem, as in the second instance: or of the copula and a syncategorem, as in the third example.

In the sentence, *sic vita erat*, the word *sic*, which belongs to the first class of mixed words, stands elliptically as the representative of the predicate: *His course of life was a-course-of-life-conducted-in-this-manner*.

The mixed words of the second class (formed by the combination of a categorem with a syncategorem) are themselves also categorems or simple terms. Thus *nemo* is a mixed word, because it is formed of *nullus* and *homo:* but it is a simple term, because it may be the subject of a proposition. Thus again the words, *consideration, progress, spirit, perfection*, are in themselves categorems; whereas, the words *this, single, finite*, &c. cannot be any other than syncategorems. But the mixed word, *This single consideration of the progress of a finite*

spirit to perfection, is also a categorem; and the less complex terms which form a part of it are, when taken in connexion, reduced to the rank of syncategorems.

The third class of *mixed words* comprehends all grammatical verbs, except the substantive verb in the indicative mode and present tense, which simply denotes unqualified existence, divested of all notion of time or mode. Thus *I stand*, logically resolved, denotes *I am standing;* and, by the completion of the predicate, *I am a person standing.*

Nomen Logicum, est Terminus simplex sine tempore significativus. Nam ex antedictis, *Terminus simplex* idem valet atque vox articulata et recta, et ex instituto significans; siquidem exclusæ sunt voces inarticulatæ, quasque natura sponte suggerit; voces autem obliquæ sunt Syncategoremata.

Logical Nouns are equivalent to *Simple Terms*, or *Categorems*. They are *significative:* in opposition to adverbs, prepositions, conjunctions, &c. which have no actual signification, but either merely unite into one sentence the words with which they are connected, or qualify them, or denote certain relations which subsist between them. They *do not express time:* and thus are distinguished from verbs, which, by the changes of terminations or by the help of auxiliaries, denote time past, present, and future.

The definition of a *Logical Noun* given in the text is not accurate. It appears to imply that the *Noun* is a *kind* of *simple term*, distinguished from other kinds of simple terms by the adjoined qualities, *significant*, and *inexpressive of time.* Whereas in fact these qualities are essential to a *simple term;*

and the two, instead of being related to each other as a part to the whole, are exactly equivalent in signification. A Logical Noun may be defined, *A significant word, inexpressive of time or relation.* The additional limitation, *inexpressive of relation*, excludes both adjectives and the oblique cases of substantives.

The word *recta* in the text, applied to *vox*, is used in the grammatical sense, in contradistinction to the subsequent expression *voces obliquæ.* The ancient grammarians represented the natural form of a noun as being *erect* or *upright;* and the various modifications which the noun undergoes in government, as *fallings-off*, (*casus*,) or *declensions* from that erect form. Hence *vox recta*, or (by a strange confusion of metaphor) *casus rectus*, was adopted to denote the primitive form or *nominative case:* while the epithet *obliquus* was attached to the governed cases; that is, to all the other cases except the vocative.

Nouns in the vocative case cannot fall under logical rules; for they form no part of a sentence. Mere sounds of imitation and natural exclamations are for the same reason excluded.

Omne Nomen Logicum est vel *singulare*, quod rem unam et solam significat, ut *Socrates:* vel *Commune*, quod plura, et eorum singula significare potest, ut *homo.*

1. All nouns are *singular* when they are so employed as to denote exclusively some one single object.

Such are all *Proper names;* as *London, England,* the *Thames, Adam, George, Alexander, Aristotle, Sirius, Arcturus.*

Such also are those words which are grammatically denominated common or appellative, when they are employed in an abstract or collective sense: as *Logic,*

Geography, Wisdom, Honesty, Melody, Happiness, Ambition, Pleasure, Gold, Air, Light, Money.

Such also are any other common or appellative nouns when a sign or syncategorem is so combined with them as to limit their application to a single object: as, *The King, My eldest brother, The noble Lord who spoke last, The first man who ever ventured on the ocean.*

2. Every *Common noun* denotes a *class:* and is applicable to every single object which bears the characteristics of that class: as, *Mountain; The mountains of America; Pleasure; Those pleasures which are followed by remorse; Europeans.*

Thus the name *Man* serves to represent the whole class of mankind collectively; as, *Man is a rational creature.* Yet each individual of the human race is with equal correctness denominated *a man.* The word *Rectilineal Figure* signifies a class consisting of many things; and the same word is employed to designate each of those things individually.

Singular nouns are sometimes employed (not logically, but figuratively) as *Common* nouns. As;

The CICERO *of his day.*

Some village HAMPDEN, *that with dauntless breast*
The little tyrant of his fields withstood;
Some mute inglorious MILTON *here may rest;*
Some CROMWELL, *guiltless of his country's blood.*

The nature and origin of *Common nouns* will be more appropriately considered hereafter, under the head of *Predicables.*

Sunt etiam aliæ Nominis divisiones.

The following divisions (except the first) denote not so much distinct kinds or classes of nouns, as different uses or applications to which words are subject.

1. *Finitum* est cui abest particula *non: Infi-*

nitum, cui præfigitur: ut, *non homo*, i. e. omnia præter hominem: unde particula *non*, dicitur *infinitans*.

The proper English terms which express this division of nouns are *Definite*, and *Indefinite*.

By prefixing the negative particle the expression is rendered (not *infinite*, but) *indefinite*. If it be predicated of any thing that it is *not a book;* that one thing, *book*, alone is excluded, while it continues wholly *undefined* what other thing the subject thus spoken of may be.

A definite noun and its corresponding indefinite noun together constitute a perfect division or dichotomy. Thus, all animals are either *rational or not-rational;* all created things are either *sentient or non-sentient; corporeal or incorporeal;* all men are either *virtuous or not-virtuous.*

2. *Positivum*, est quod significat rem quasi præsentem: *Privativum*, quod dicit absentiam rei a subjecto capaci: *Negativum*, quod ab incapaci. Sic *homo* est vox *positiva ; videns* dicitur de homine *positive; cæcus* de homine *privative ; cæcus*, seu potius *non videns*, de lapide *negative.*

In the sentence, *The satellites of Jupiter are visible through a telescope*, both the word *visible*, and the other terms employed, are used *positively*. In the sentence, *The moon is occasionally invisible*, the word *invisible* is used *privatively*, and the predicate, *an invisible thing*, is a *privative noun;* because it expresses the absence of *visibility* from *the moon* which is capable of *being seen*. But when it is said, *The human soul is invisible*, the word *invisible* is *negative*,

inasmuch as it is predicated of a subject incapable of *being seen.*

The following are examples of *Positive, Privative,* and *Negative* Words.

Positive,	A *living* man.	*Pleasant* society.
Privative,	A *dead* man.	*Unpleasant* sounds.
Negative,	A *lifeless* corpse.	*Unpleasant* sarcasms.
Positive,	A man of *feeling.*	A *mortal* body.
Privative,	An *unfeeling* wretch.	*Immortal* fame.
Negative,	The *senseless* rock.	A soul *immortal.*
Positive,	A *fruitful* vine.	A *fruitful* treatise.
Privative,	An *unfruitful* vine.	A *fruitless* search.
Negative,	The *unfruitful* elm.	*Fruitless* anxiety.
Positive,	A man of great *merit.*	
Privative,	The *demerit* of human works.	
Negative,	The *demerit* of sin.	
Privative,	The measure proposed was *unconstitutional.*	
Negative,	Every infringement on the prerogative of the crown is *unconstitutional.*	

A rational *man may be guilty of* irrational *conduct.*

The irrationality *of brutes is inherent in their nature.*

Telum imbelle *sine ictu.*

As uncertain *as the wind.*

The debt immense *of* endless *gratitude.*

It frequently occurs that the same word may, under different points of view, be considered either as positive, or as privative or negative. Thus *mortal* is positive, in reference to *immortal,* its privative or negative. But *immortal* may be understood as *positive,* in contrast with *perishable.* Again, *death* is the *privation* or *negation of life:* but it may be accounted *positive* as opposed to *deathless.* Words may often be variously classed, as we consider their significa-

tion or their formation, as, *wicked, unholy; unhappy, wretched; impure, filthy.*

3. *Univocum*, est cujus una significatio æque convenit multis, ut *homo*: *Æquivocum*, cujus diversæ, ut *Gallus*: *Analogum*, cujus una inæqualiter, ut *pes*.

Two essential characteristics are to be noticed in each of these definitions; namely, *the number of the significations*, and *the application of those significations to the things signified.*

1. An *Univocal* word has *one* signification only: and in that one signification it is *equally* applied to many things.

2. An *Equivocal* word has *more than one* signification: and in each of its significations it is a distinct common term, and therefore applicable to many objects. The coincidence in sound, or sense, or both, is merely accidental; and is a great imperfection in language. It is probable that no language is exempt from this evil: but it abounds to a great extent in the English. This is indeed a natural consequence of the variety of sources from which our words are derived. For a difference of origin is the chief occasion of equivocal words. The following are examples:

Οὖρος· favourable wind; guard; buffalo; boundary; mountain. Οὐρός· trench; whey.

Ἰός· a dart; poison. Βίος· life; βιός· a bow.

Ἄλημα· (from ἀλάομαι·) vagrant: (from ἀλέω·) flour.

Malus; (masc.) mast of a ship: (fem.) an apple tree.

Tempus; time; temple of the head.

Club; a heavy stick; a society.

Mail; a post-bag; armour.

Tract; a small book ; an extent of country.
Ounce; a legal weight; a species of animal.
Pound; a legal weight; an inclosure for beasts.
Palm; a species of tree; the interior of the hand.
Page; side of a leaf in a book; an attendant.
Mast; fruit of the beech; erect timber in a ship.
Ear; the organ of hearing; a spike of corn.
Bill; a fowl's beak; a written account.
Meal; a repast; flour.
Nail; horn on human fingers; spike of metal.
And at one *bound* high overleapt all *bound.*

Some words are equivocal to the eye alone, but not to the ear, as, *mora,* (*delay, mulberries:*) *mala,* (*a jaw, misfortunes.*) Others to the ear alone, as, *heir, air: hair, hare: soul, sole.*

Proper Names may be considered as partaking in some measure of this *equivocal* quality. The name *Thomas,* for instance, is applied to those who are so called, not as to individuals of the same class, or bearing any common character intended by that name, but in a manner wholly arbitrary and independent.

3. *Analogous* Nouns have primarily but *one* signification. From that signification, as a common source, flow a variety of particular applications; whence they are said to be *unequally* applied to many things. For, of the aggregate of notions represented by the term in its original use, sometimes one portion and sometimes another is discarded, a few only of the leading ideas being retained. Thus the words become appropriated in a modified and subordinate sense to objects which bear no more than an analogy or similarity to their original application. For example:

Sacramentum; a legal deposit; a military oath; a Christian sacrament.
Judgment; a faculty and an operation of the mind; legal decision; critical taste.

Intention; the state of being strained; purpose; close attention; application of a word.

Sting; of an animal; of conscience; of an epigram.

A religious person; a man of piety; a person set apart by religious ceremonies, or holding a religious office.

College; the corporate society; the building which contains the society.

Τιμή· honour, or punishment; that is, the conferring on each their due.

Æquor; a plane; the earth; the sea.

Ἀκολασία· ἡ περὶ τὰς ἡδονὰς ὑπερβολή· αἱ παιδικαὶ ἁμαρτίαι.

The *bitterness* of a draught; of a foe; of fate; of a sarcasm; of the frost.

Κλείς· a key; a collar-bone (from the shape.)

Ὥρα· time; season; period of life; personal beauty.

Fall; the act of dropping; moral or political degradation; the autumn; diminution in price; musical cadence; declivity.

Justice; social right; punishment; the administrator of social right or legal punishment.

Heat; caloric; the sensation produced by caloric; a violent effort; sudden anger.

A *vein* of the body; of metal; of poetic feeling.

It was a *sight* worth seeing; but my *sight* is so imperfect, that I could not get a distinct *sight* of it.

Τέλλῳ, τοῦ βίου εὖ ἥκοντι, τελευτὴ τοῦ βίου λαμπροτάτη ἐπεγένετο. (*Herod.* i. 30.) *livelihood* or *income; life.*

Cicero uses the following expressions within the space of fifty lines in the first book of the Offices:

Institutio quæ a ratione *suscipitur:* (*reason.*)
Ratio *probabilis:* (*reason or account.*)
In rationem *utilitatis cadit:* (*head or division.*)

Ratio *triplex:* (*plan or classification.*)
Pari ratione: (*manner.*)

In the same work he has the expressions,

Omnis ratio *debet vacare temeritate:* (*course or system of conduct.*)
Quibus rationibus: (*by what means.*)
Ratio *negligendæ mortis:* (*the principle.*)

So again in the course of one chapter we find these various uses of the word *contentio:*

Altera contentionis, *altera sermonis:* (*of public speaking.*)
Sine contentione *vox:* (*without straining or vehement effort.*)
Contentiones *aliorum:* (*public speeches.*)

There are indeed very few words which are not *analogous;* probably none, except those which have never come into general use, but have been wholly confined to some philosophical or technical application. Our *notions* are infinitely more numerous than our *words;* each of these must therefore represent many of the former. To invent a new word for every new apprehension would be impracticable; or, if practicable, would defeat its own purpose. Hence we must use words approximating in signification to the new ideas which we desire to express. In judging of this approximation, not only the illiterate, but philosophers have often erred. Yet the words which custom has established, though philosophically erroneous in the analogical application, must be retained; while they render a particular effort of the mind necessary, to guard itself against adopting the false principles on which the use of them was originally founded. The metaphysical terms, *perception, form, idea,* afford instances of this erroneous process. So the Hindoos use the same word, *copal,* to signify *the forehead* and *destiny:* in consequence of a fancied analogy derived

from their notion that all the future actions and events of the life of every individual are written invisibly on his forehead soon after his birth.

It is not accurate to assert that *equivocal* words have their significations *equally* agreeing with the several objects to which they are applied. On the contrary, they are liable to be employed in every variety of *analogy* which each of their several significations may admit. The same words are therefore both equivocal and analogous: for instance,

Post; a swift or periodical messenger; an expeditious mode of travelling.

Post; a piece of timber set erect; a military station; office or duty; a stupid fellow.

Case; (casus,) state of circumstances; grammatical variation of nouns.

Case; (caisse,) chest, box, exterior covering.

Bull; the animal; a violent enemy; sign of the zodiac.

Bull; the pope's official letter; an absurdity.

Foot; the part on which we stand; that which supports any thing; the lower part.

Foot; a measure of length; a certain number of syllables in a verse.

Probably all these significations of the word *foot* are derived from analogy. But when the analogy is not obvious, the several senses are often considered independent of each other, and the word is classed as equivocal. Thus it may be doubted whether the different significations of *κόσμος* and *mundus* were attached to those words by a merely accidental coincidence, or whether they originated in any supposed analogy. On the other hand, some words which are really equivocal have an apparent approximation in sense which occasions them to be mistaken for analogous words: as, *tale*, derived from two distinct Saxon words, from one of which it receives the meaning of *a narration;* from the other that of

a reckoning: priest, as used in the totally different significations of ἱερεὺς and πρεσβύτερος.

Every word becomes strictly *univocal* when it forms a part of a clear and definite sentence; the aggregate of ideas which it is intended to represent being fixed by the connection in which it stands.

4. *Concretum*, est quod rem quasi suâ naturâ liberam exprimit, sed jam implicitam subjecto, ut *Justus: Abstractum*, quod rem quasi suâ naturâ nexam, sed jam subjecto exemptam, ut *Justitia.*

The notions expressed by *Abstract Nouns* are acquired by a process of this nature. The primary sensations of our mind are excited, (if not universally, at least so far as the present distinction is concerned,) by individual external objects discerned by the bodily senses, or by individual acts of internal reflection: such as those expressed by the words, *brother, philosopher, green field, accurate judgment.* We discover that these objects excite not simple but complicated notions; that they consist of some subject combined with certain qualities, or modes of existence. These, by a natural operation of the mind, we resolve as distinct parts; separating from each other the notion of the subject, (as *man, field, judgment,*) and that of the adjoined quality, (as, *fraternity, philosophy, greenness, accuracy.*) Thus we consider the quality as if *naturally adhering* to the subject in which we first discovered it, and now separated or *abstracted* from it in imagination only. The word which represents the notion of a quality thus acquired is called an *Abstract Noun.*

This mental separation of the quality from the subject to which it actually adheres may be effected if we have never had more than one object con-

taining that quality presented to our apprehension. But the operation is both facilitated, and rendered more correct, when we have the opportunity of comparing many different things in which the same quality is discoverable. Thus if we derived our notion of *heat* only from *the sun*, we might be led to consider *radiance* and *celestiality* as essentials to that quality, and to admit those ideas as parts of the aggregate denoted by the abstract word *heat*. But when we find the same quality existing in *culinary fire*, without the latter adjunct; and produced by *friction* without the former; we learn to separate it from those notions, and to employ the abstract term simply to denote that quality by which a certain natural sensation is produced.

The word expressing the object of sense or of mental apprehension from which this process of abstraction originates (as, *brother*, *philosopher*, *green-field*, *accurate-judgment*) is sometimes called *connotative;* intimating that we arrive at once at the knowledge of the subject, and of the adherent quality.

The term *Concrete Noun*, though usually employed simply as the opposite to *abstract*, refers to a supposed process of the mind exactly the reverse of that just described. If we can conceive our mind to be unconnected with the body, and endued with an instantaneous and intuitive knowledge, we may suppose it to commence its operations with the notion of the simple quality itself, not as abstracted from any subjects, but as if it naturally and primarily existed in a distinct, absolute, and independent state. The mind may then be considered as proceeding to apply those qualities to particular subjects; as, to *man*, *field*, *judgment*, *fire*. The terms expressive of those combinations of ideas (as, *brother*, *philosopher*, *green*, *accurate*, *hot*) are called *concrete words*.

As our abstract notions are the mere productions

of the mind, without any correspondent *thing* in nature, the latter must be considered as only an imaginary process, the former as the actual process.

Abstract notions are usually expressed by substantives, as *holiness*, *virtue*, *philosophy*, *similarity*, *fraternity*, *royalty*, *ἀδικία*, *δικαιοσύνη*. *Concrete* notions are usually expressed by adjectives, or by attributive substantives; as, *holy*, *virtuous*, *philosopher*, *similar*, *brother*, *king*, *ἀδίκημα*, *δικαίωμα*.

The same word often represents both the abstract and the concrete notion; as, *Truth lies in a well. One truth is clear.* The one is also frequently employed figuratively for the other: *Involving truth in obscurity* is more philosophically as well as poetically expressed, *Obscuris vera involvens.* (Æn. vi. 100.)

5. *Absolutum*, est quod significat rem per se sumptam: *Relativa*, quorum conceptus se mutuo ingrediuntur, ut *Pater et Filius.*

An *Absolute Noun*, as opposed to a *relative* noun, (for the word is employed by logicians in different senses,) denotes a term the sense of which is complete in itself. But a *relative* noun expresses an idea which cannot be apprehended unless we have at the same time a notion of its correlative. Thus *father* implies the notion of *son* ; and *son* of *father*. Such are also *cause* and *effect* ; *whole*, *half*, *double*, *treble* ; *great*, *small* ; *swift*, *slow* ; *genus*, *species* ; *high*, *low* ; *king*, *subject*. Correlatives have often the same name; as *friend*, *enemy*, *companion*, *opposite*, *equal*, *brother*, *cousin*, *comrade*.

6. *Convenientia*, sunt quæ possunt de eodem simul dici, ut *doctus et pius: Repugnantia*, sive *Opposita*, quæ non possunt, ut *album et nigrum*.

Qualities may be predicated of the same subject at *different* times, which notwithstanding are *opposite,* or *inconsistent:* for example, The wall which to-day is *white,* may to-morrow be *black.*

Relative terms are *opposite,* when their subject is the same. To be *father* and *son* of the same individual is impossible. That which is *half* of one quantity may be the *whole* of another: but *half* and *whole* are opposite, or inconsistent, if applied in relation to the same quantity.

Contrary words are *opposite,* or *inconsistent;* as *truth, falsehood; happiness, misery.*

Such also are a *positive* and a *privative:* as *harmonious, unharmonious.*

But the strongest and most complete *opposition* of simple terms subsists between a *positive* and a *negative* word; or a *definite* and *indefinite* term: as, a *feeling* man; an *unfeeling* rock; he is *a hero;* he is *not a hero.*

7. Nomen *Primæ intentionis,* est Vox in communi usu posita: *Secundæ,* Vox artis, quam ex communi sermone sumptam Philosophia recudit denuo et moderatur.

A distinction must be made between the logical and the etymological signification of the terms *primary* and *secondary intention.* In Etymology, the primary sense is that which was prior in point of time, or which most nearly approaches to the meaning of the root whence a word is derived: and every variation from that sense is a secondary meaning.

But in Logic, the vague colloquial signification is called *primary:* the strict philosophical appropriation of the word is called the *secondary* intention. It is not easy to give examples of the *noun of primary intention,* because the use of any word in a

definite sentence fixes and limits its meaning, and thus renders it a *word of secondary intention.* The following instances may however serve to illustrate the distinction.

The attractions *of good company.*

The magnet has the power of attraction.

Attraction *is the tendency of bodies to each other, without any apparent impelling cause.*

Attraction *in Chemistry is the tendency of substances, especially liquids, so to intermingle with each other as to become inseparable.*

Attraction *in Grammar is a figure by which a word is not constructed according to the usual rules of government, in consequence of the influence of some preceding word with which it agrees.*

The Chancellor spoke with much animation.

The means of restoring suspended animation.

A lad of dull comprehension.

Comprehension, *in metaphysics, is, rem aliquam totam et totaliter cognoscere.*

Διαλεκτίκη· the art of conversation; logic.

Ὁρίζων· any thing which limits; the horizon.

Ὁρὸς· a limit; a geographical boundary; the definition of a word.

Ἐπίσκοπος· an overseer; a bishop.

Ἀπόστολος· a messenger; an apostle.

Si mala *condiderit in quem quis carmina; jus est*
Judiciumque. Esto; si quis mala: *sed bona si quis*
Judice, condiderit, laudatur Cæsare. (Hor.)

Here *mala carmina*, is playfully introduced both in its *secondary*, that is, its legal signification, *slanderous, libellous* verses; and in its primary or colloquial sense; *ill-written, poor, doggrel.*

Aristotle takes the word πρᾳότης, *lenity*, from its common and *primary* sense, to signify *the due medium between the excess and defect of anger;* for which the Greek language did not supply an accurate term.

Delight, in its *primary* sense, denotes *a superior*

degree of pleasure. But Burke employs the word to express *the sensation which accompanies the removal of pain or danger.* This then is a limited, new-modelled, philosophical, *secondary intention.*

In like manner every author has a right to appropriate any word to a new *secondary intention;* by strictly defining the whole number of ideas which he intends to represent by that word; and by afterwards adhering closely to the same use of it. Such a process is however never expedient, unless in a case of necessity. Locke has done this in regard to the word *judgment,* which he defines *The putting ideas together, or separating them from one another in the mind, when their certain agreement or disagreement is not perceived, but presumed to be so.* Professor Stewart and others have affixed a new secondary sense to the word *conception;* by limiting it to *That power of the mind which enables it to form a notion of an* absent *object of perception; or of a sensation which it has formerly felt.*

Xenophon represents that an officer at the table of Cyrus complained of some of his brother-officers, because they had either invented or coloured the anecdotes which they had related, for the purpose of exciting laughter; and charged them with being ἀλαζόνες. Cyrus defends them by asserting that he misapplied that word by using it in too vague and extensive a sense. In the mouth of this officer it was therefore a word of *primary intention.* Cyrus proceeds to assign its secondary intention thus: Ὁ μὲν γὰρ ἀλαζὼν ἔμοιγε δοκεῖ ὄνομα κεῖσθαι ἐπὶ τοῖς προσποιουμένοις εἶναι καὶ πλουσιωτέροις ἢ εἰσὶ, καὶ ἀνδρειοτέροις, καὶ ποιήσειν ἃ μὴ ἱκανοί εἰσιν ὑπισχνουμένοις· καὶ ταῦτα, φανεροῖς γιγνομένοις, ὅτι τοῦ λαβεῖν τι ἕνεκα καὶ κερδᾶναι ποιοῦσιν. Yet the sense in which the officer used the word coincides with that which Aristotle assigns as its *secondary* or *philosophical* signification: Δοκεῖ ὁ μὲν ἀλαζὼν προσποιητικὸς τῶν ἐνδόξων εἶναι, καὶ μὴ ὑπαρχόντων, καὶ μειζόνων ἢ ὑπάρχει.

§. 4. *De Prædicabilibus formandis.*

NOMEN Singulare dicitur alio nomine *Individuum*, ejusque significatum *Unum numero:* neque enim singulare est quicquid Unum dici potest; sed multa, quæ sunt invicem similia, eatenus Unum censentur. Vocantur enim uno eodemque nomine; quod ipsa Vocis definitio non patitur, nisi in illis reipsâ sit, vel saltem concipi possit, una aliqua eademque Natura, quæ huic nomini respondeat.

Talem reperit intellectus, dum plura contemplando *abstrahit* ab eorum *differentiis;* i. e. spectat in rebus ea tantum quæ conveniunt, neglectis omnibus quibus dissident; adeoque fundamentum omne discriminis, præter numerum, eximit. Quare *naturam* sic *abstractam*, cum sit omni singulorum differentiæ superstes, concipi par est, non ut in singulis diversam, sed ut in omnibus eandem; adeoque *Universale* quiddam sive *Ens unum in multis:* ejusque signum idoneum erit, Nomen *commune*, *univocum*, *secundæ intentionis*, uno verbo, *Prædicabile*, sive *Vox apta prædicari*, i. e. univoce dici de multis.

1. A *Singular word* is called an *Individual Noun;* borrowing that distinguishing epithet from the nature of the object which it represents; namely, a sin-

gle or individual object. Such a term cannot be *divided*, either by classification, or by enumeration, because that which it signifies is only *numerically one.*

Every thing which actually exists is *singular*, and is therefore capable of being expressed by a singular sign or word. But these objects are so numerous, that it would be burdensome and useless to appropriate a distinct name to each.

It is found sufficient, therefore, to affix singular names to those things which occur most commonly as subjects of mutual communication; as, men, countries, cities, rivers, mountains, &c. On this principle a grazier has a particular name for each horse and cow he possesses, and an astronomer affixes a distinct denomination to every star. Thus also a singular name is invented for each house in a city, by joining to the name of the street or place in which it is situated, its particular number. In like manner, the descriptive expression, *the comet which appeared in the year* 1825, is a singular noun, and denotes an individual object.

2. Nouns are *common* or general, when employed as signs of abstract or general notions. And our notions become abstracted, when, upon comparing several individual objects with each other, and, discovering in them a variety of qualities in which they agree together, as well as several in which they differ, we lay aside the consideration of the latter, and retain and combine all and only those ideas, which are excited by the qualities in which they appear to coincide with each other. When we proceed, by a further mental process, to consider the abstract notion thus acquired, as indiscriminately and equally appropriate to the whole class of the individuals from which it was derived, and to all others which comprehend the same qualities, we are said to *generalize*. From the former process the notion or idea thus acquired is denominated an *ab-*

stract notion: from the latter it is called a *general* or *universal* notion.

This abstract or universal notion is expressed by a *sign* or *word* which is called *common*. And such a word, notwithstanding the many individuals to which it applies, is considered as a representative of that *one* notion, or *one* object; otherwise it would cease to be an *univocal* term. For the notion itself, and the supposed subject of it, are no longer thought of as existing in a variety of things numerically different; but as being, to whatever individuals it is applied, still one and the same. That the *thing* supposed by that notion, the αὐτὸ ἕκαστον, the *universal* nature, really exists, is not to be conceived. No such thing as *abstract-man*, (αὐτὸ ἄνθρωπος,) *abstract-animal*, *abstract-colour*, *abstract-harmony*, independently of any particular modification and combination, can exist; we only imagine or conceive them to exist for the convenience of generalization and classification.

The process of the mind in abstraction may be thus more fully illustrated. An infant first attains the individual notions of its *father*, its *mother*, its *brother*, its *nurse*, &c. In these it perceives, besides the characteristic attributes of each, certain qualities possessed by all as a kind of common nature. In process of time it sees other objects, in many respects similar to these. It lays aside the ideas of relationship, sex, dress, height, rank, &c. which distinguish the individuals from each other; and having thus framed to itself one idea, which is equally applicable to each, learns to denote that idea by the name *man*.

Again; we observe *horses*, *cows*, *lions*, *dogs*, *apes*, &c. (which are themselves also general or common words expressing ideas attained by abstraction from the individuals of each kind respectively;) and we discover in them several qualities

common to them all. Renewing therefore the original process, we divest these classes also of their respective differences, and distinguish the notion comprehending all the qualities in which they are similar to each other, by the name *beast*. In the same manner have been acquired the notions denoted by the words, *bird*, *fish*, *insect*, &c. If again we compare *bird*, *fish*, *beast*, *insect*; by a similar operation of the mind, we arrive at the more abstract notion expressed by *brute*. But in all *brutes* we may discover certain qualities which likewise belong to our idea of *man*. Laying aside therefore the notions of *reason*, *speech*, and other differences, we retain only the ideas belonging to the common nature, viz. *body endued with life*, *sensation*, *and spontaneous notion*, which we call by the common name, *animal*. After having by continued abstraction obtained the idea of *animal*, and the idea of *plant*; laying aside the notions of *sensation*, *motion*, &c. and of *height*, *colour*, &c. and only retaining the notions of *body*, *life*, *nourishment*, *growth*, &c. which animals have in common with plants, we obtain the abstract idea to which we affix the common name, *living body*. By a similar process we gain the idea of *body*, by dropping the notion of *life*, *growth*, &c. and retaining those of *separate existence*, *bulk*, &c. which belong to *rocks*, *metals*, *liquids*, &c. Thence, by the comparison of these objects with such others as are denoted by the words, *soul*, *angel*, &c. divesting each of their characteristic properties, we form the still more abstract notion expressed by the term *substance*. And lastly, as the highest step, we compare *substances* with *qualities*, and laying aside the consideration that the one class can and the other cannot subsist independently of any other created object, we adopt the word *being*, *thing*, or *entity* to denote the one notion of pure existence, and apply that word to all the classes

and individuals which *are*, or can be supposed to *be*.

A few other instances may be added in illustration of this operation of the mind. By abstracting from the individuals, *Socrates, Plato, Xenophon, Aristotle*, &c. the various circumstances in which they differ from each other; and viewing in combination all or the chief qualities or attributes which are common to them, we derive the general idea denoted by the common noun *Philosopher*. From *Homer, Pindar, Sophocles, Euripides*, &c. the idea of *Poet*. From *Parrhasius, Zeuxis*, &c. that of *Painter*. From *Herodotus, Thucydides*, &c. the idea of *Historian*.

From the particular impression on the eye, occasioned by the *green grass*, a *green cloth*, the *green in the rainbow*, &c. the mind derives the abstract idea of *Green*. From the comparison of *green* with *blue, red, violet, indigo*, &c. it derives the still more abstract notion of *Colour*. From *colour, light, taste, sound*, &c. that of *Passive Quality*. From *passive, habitual*, and *natural quality*, that of *Quality*.

From individual *triangles*, whether *right-angled, obtuse-angled, isosceles, equilateral, small, large*, &c. we acquire the abstract notion expressed by *Triangle*. From *triangle, square, rhomb, polygon, circle*, &c. are acquired the idea of *Figure*. From *figure* and *form*, that of *Sensible Quality*. From *sensible, passive, natural*, and *habitual quality*, the general notion of *Quality*.

The imperfect exercise of this faculty of abstraction, as observable in children and savages, will serve more fully to illustrate its nature. A striking instance of it was afforded by two natives of New Zealand, who lately visited England. Having in their own country no quadrupeds except dogs, pigs, and rats, of which the first only are indigenous, and not having acquired any common name to

comprehend those three classes of animals; they applied their name for dog (*caráddee*) at first to those two species which were new to them; and subsequently to every quadruped which they saw in England, as supposing them to be no more than particular variations of the same species. Upon further acquaintance, however, with the various kinds of animals, they adopted *caraddee* in a sense equivalent to *quadruped*, expressing the several species by adding to that word the English name of the animal. Thus they carried back with them to their own country the names, *caraddee-horse*, *caraddee-cow*, *caraddee-sheep*, as well as *caraddee-dog*: employing their old word to denote an idea more abstract, (that is, comprehending fewer simple ideas, and extending to a greater number of individuals,) than that which they had originally attached to it.

A similar process is observable in other languages. Thus the Greeks and the Romans, as they emerged from the state of barbarity, transferred the words ἀρετὴ and *virtus*, from their original application, (as denoting the only moral excellence which they acknowledged, namely, *manliness* or *courage*,) to a more abstract sense, including *every moral excellence*: that is, to speak technically, the word at first indicative of the *species* became appropriated to the *genus*. So δικαιοσύνη, originally applied to *distributive justice*, subsequently acquired a more abstract application to *universal virtue*; *goodness*, which probably was first employed to denote *benevolence*, has gradually acquired its present more extended sense.

There are many words in the use of which we may trace an opposite process, the more abstract and extensive term having subsequently acquired a less abstract signification, by the addition of some new ideas to those which it originally comprehended. We have examples of this in the words, *passion*, when applied to *anger*; *charity*, applied to

alms-giving; lust, as applied to *impure desire; affection*, as applied to *love*.

The process of the mind previously described for the purpose of illustrating the origin and nature of *abstract nouns*, is of the same nature as that which is here more fully developed. Every abstract notion might, if it were thought necessary, be distinguished by a corresponding abstract noun. Thus we might use the terms *animality* and *man-ness*, to denote the abstract notion, which we acquire from the concretes or connotatives, *animal* and *man*. The general adoption, however, of such words would be cumbersome and needless.

The word which represents an abstract or generalized notion has been shewn to be *common* and *univocal*. Since the ideas attached to it become, by this process, limited in a philosophical and correct manner, it is also a word of *secondary intention*. And because it is capable of being affirmatively predicated or asserted of all the individuals from which the idea of the universal nature or quality has been derived, it acquires also the denomination, *Predicable*.

§. 5. *De Speciebus Prædicabilium.*

PRÆDICABILIUM capita constitui et definiri possunt ad hunc modum. Natura abstracta, sive Ens unum in multis, vel est tota eorum essentia; vel ejus pars, materialis nempe aut discretiva; vel cum essentiâ conjunctum, necessario scilicet, aut contingenter. Quare Prædicabilia sunt quinque, et non plura; videlicet, *Genus, Species, Differentia, Proprium, Accidens.*

Ens
Unum in multis.

- Essentia.
  - Tota.
  - Pars Essentiæ.
    - Materialis.
    - Discretiva.
- Cum Essentiâ Conjunctum.
  - Necessario.
  - Contingenter.

Nam 1. *Genus* est quod prædicatur de pluribus ut eorum essentiæ *pars materialis* sive communis; ut *animal.* 2. *Differentia,* quæ ut essentiæ *pars formalis* sive discretiva; ut *rationale.* 3. *Species,* quæ ut tota essentia; ut *homo.* 4. *Proprium,* quod ut essentiæ junctum necessario; ut *risibile.* 5. *Accidens,* quod ut essentiæ junctum contingenter; ut *album, nigrum, sedere.*

The process of abstraction, and the use of common nouns, are subordinate to that arrangement and classification, without which our absolute knowledge could not be applied to much practical advantage. But this classification may be carried still further; and the mind discovers, amidst the mass of abstract notions which it acquires, certain distinguishing qualities, which may form the ground of a convenient and complete arrangement of them under distinct heads. Many outlines for such a classification have been suggested. But that which has been generally adopted as most convenient in practice, although in some respects not altogether

satisfactory, is the fivefold division into *Genus*, *Difference*, *Species*, *Property*, and *Accident*.

The reflecting mind discovers, that the general notions which it has formed bear certain relations to each other. If it conceives of some imaginary common nature as an *entire and independent essence*, (as, *Man*, *Triangle*, *Anger*,) it cannot but observe also that this supposed essence is composed of *parts*; that is, that the notion of it may be resolved into more simple and more abstract notions: for instance, the idea of *man* resolves itself into those of *animality* and *rationality*; *triangle* into *plane-figure* and *the quality of having three sides*; *anger* into *mental-perturbation* and *the experience of supposed injury*. The mind further perceives that there are other abstract notions of qualities *joined to* the supposed primary essence; *risibility*, *tallness*, *nobility*, to *man*; *the having three angles*, *the being equilateral*, to *triangle*; *the desire of revenge*, *the being vehement*, or *suppressed*, or *long-continued*, to *anger*.

Hence originates the leading arrangement, which is threefold; First, the notion of some quality or aggregate of qualities belonging equally to many things, which notion we call *the essence or species*; secondly, the principal notions which conjointly make up that aggregate of qualities, which are therefore called *the parts of the essence*; and thirdly, the notion of some dependent qualities in addition to those which have been viewed as parts of the whole idea, and therefore spoken of as *joined to the essence*.

The *Parts* of this general notion or supposed essence are two; of which *one* is *common* to it and to other essences, and is called the *Genus*; as *animality* is common to *man* and *brute*; *plane-figure* to *triangle*, *circle*, *square*, &c.; *mental-perturbation* to *anger*, *envy*, *hatred*, *pity*, *love*, &c. The *other*, called the *Difference*, is *peculiar* to the essence, distinguishes it from all others, and forms it that

which it is: as *rationality* distinguishes *man* from all other *animals; the having three sides* distinguishes the *triangle* from all other *plane-figures; the excitement by supposed injury* distinguishes *anger* from other *passions*.

But the *quality joined* to that essence which is supposed to be the subject of an abstract notion may also be twofold: as being either *necessarily* or *contingently* joined with it, and these are respectively named the *Property* and the *Accident*. Thus with *man*, the idea of *risibility* is supposed to be *necessarily* joined; those of *nobility, poverty, tallness*, &c. are only *contingently* joined: with *triangle*, the *having three angles* is *necessarily*, the being *equilateral* or *isosceles*, is *accidentally* joined: so also *the desire of revenge* is considered to be *necessarily* joined with *anger;* the being *vehement*, or *lasting*, or *excessive*, is *accidentally* joined with it.

Such is the foundation of the metaphysical division of abstract ideas and universal natures into the five classes above enumerated. And hence also the correspondent logical division of common nouns or predicables, distinguished by the same terms: namely,

The *Species*, which expresses the whole of the supposed essence or common nature equally existing in many individuals.

The *Genus*, which expresses the common or material part of the essence.

The *Difference*, which expresses the distinguishing or formal part of the essence.

The *Property*, which expresses that which is necessarily joined to the essence.

The *Accident*, which expresses that which is contingently joined to the essence.

Patet hinc 1°. De iis *dici Prædicabile* quibus *inest Universale*. *Genusque* adeo, quod est

plurium essentiarum vel specierum pars communis, de *specie differentibus*, h. e. de diversis speciebus quas ingreditur, dici; ut *animal* de *homine* et *bruto*. *Speciem* vero, de *numero differentibus*, h. e. de diversis individuis, quorum singula habent essentiam speciei vocabulo significatam; sic *homo* de *Socrate* et *Platone* dicitur, et de omnibus, quibus natura inest humana. Reliqua vero Prædicabilia, (prout inferius patebit) eâdem de causâ, tam de specie quam numero differentibus dicuntur.

The Predicables belonging to each of these five classes are predicated (or asserted in the same sense) of many things; namely, of all those objects in which a nature corresponding with the notion represented by the word is supposed to exist.

The terms which belong to the class of *Genus* express common natures derived not immediately from the comparison of individuals, but from the comparison of several classes or *species* already formed by abstraction from individuals; whence they are technically said to be predicated of things *differing in species.*

Those which belong to the class of *Species*, since they represent the general or common notion of some abstract nature conceived to exist in a number of different *individuals*, are said to be predicated of things *differing in number.*

Those which come under the heads of *Difference*, *Property*, and *Accident*, are said to be predicated, some of them, *concerning things differing in species*, and others *concerning things differing in number*, because they may have immediate reference, either to a *Genus*, in which case they are predicated of all

the species comprehended under that genus; or to a *Species*, in which case they are predicated of the individuals from which that species is derived.

Et N. B. ex recepto more loquendi, Genus et Speciem *prædicari in* (i. e. respondere quæstioni factæ per) *Quid;* Differentiam in *Qualequid;* Proprium et Accidens in *Quale*.

If it be asked, *Quid* est illud? it may be answered by the *Species:* It is a *man;* a *triangle; anger:* Or by the *Genus:* It is an *animal;* a *figure;* a *mental perturbation.*

If it be asked, *Qualequid* est illud? What is the *quality or attribute which constitutes a part of its essence?* the answer is made by the *Difference:* It is *rational;* it is *three-sided;* it is *excited by a sense of injury received.*

If it be enquired, *Quale* est illud? the answer may be made by the *Property:* It is *risible;* it *has three angles;* it *seeks revenge.* Or by some of its *Accidents:* It is *tall*, or *learned*, or *virtuous;* it is *rectangular*, or *large*, or *equal to a given parallelogram;* it is *unreasonable*, or *just*, or *excessive.*

Unde facile est conficere vulgatas Prædicabilium definitiones. Nam *Genus* definitur, *Prædicabile quod prædicatur de pluribus specie differentibus in Quid. Differentia, quod de pluribus specie vel numero differentibus in Qualequid* &c.

These quaint and redundant definitions are derived from the characteristics given in the three preceding paragraphs.

1. A *Genus* is *a Predicable, predicated in* Quid, *concerning several things differing in species, as the material or common part of their essence.*

Thus, *Animal* is a *Genus*, predicated in Quid, (that is, expressing the nature or substance of the things signified,) concerning several classes or common natures, (that is, several things differing in species, as *man*, *bird*, *beast*, *fish*, &c.) as the material or common part of their essence: the attribute of *animality* being alike essential to all those species.

Beast is the Genus comprehending *horses*, *cows*, *lions*, *tigers*, *bears*, *dogs*, *deer*, *elephants*, &c.

Fish is a Genus comprehending *salmon*, *whale*, *shark*, *eel*, *lobster*, *crab*, *trout*, *herring*, &c.

Substance comprehends *body* and *spirit.*

Figure is predicated of *squares*, *circles*, *triangles*, *pentagons*, &c.

Metal applies to *gold*, *silver*, *tin*, *iron*, *lead*, &c.

Weapon to *sword*, *pistol*, *blunderbuss*, *dagger*, *club*, *cimeter*, &c.

2. *Difference* is *a Predicable, which is predicated in* Qualequid, *of several things which differ either in species or in number, expressing the formal or distinguishing part of their essence.* It is the term which denotes the primary characteristic attribute of any species; which distinguishes it from every other species contained under the same genus, and is the source of its other qualities or properties.

The *Difference* or distinguishing attribute of *Animal* is *sensation,* which separates it from *inanimate body*, whether *vegetable* or otherwise. *Extension* is the difference of *body*, distinguishing it from every *incorporeal substance*. *Reason* distinguishes *man* from *brutes*. *The having only three sides* distinguishes *triangles* from *squares*, *polygons*, and every other species contained under the common Genus, *rectilineal figure*.

3. *Species* denotes *that class of predicables which is predicated in* Quid, *concerning several things differing in number, as expressing their whole essence.*

Thus, *City* is a species including *London, Oxford, Paris, Athens, Rome,* &c.

River, includes the individuals, the *Thames, Isis, Cam;* the *Tyber,* the *Danube,* the *Halys,* &c.

Man, is the name of a species comprehending *Socrates, Plato, Aristotle, Zeno, Cratippus; Musæus, Homer, Virgil, Milton; Thucydides, Herodotus, Livy, Tacitus, Hume,* &c.

Star, applies to the *Polar Star,* to *Arcturus, Bootes, Sirius, Aldebaran,* &c.

4. *Property,* is *the kind of Predicable predicated in* Quale, *of several things differing in species or in number,* (in other words, predicated either of different species or of different individuals,) *as necessarily joined to their essence.* It is a quality inseparable from that of which it is predicated, but it does not constitute part of its essence. It is therefore a secondary and dependent attribute, usually (perhaps invariably) flowing as a consequence from the primary attribute, namely, the difference.

The Property of *Man* is generally supposed to be *risibility,* which is the result of his essential quality or difference, *rationality.*

The Property of a *Triangle* is *the having three angles,* which necessarily proceeds from its distinguishing part, or difference, *having three sides.*

The Property of *Anger* may be conceived to consist in *the desire of revenge* which accompanies it, and is the effect of *the sense of injury received.*

It would require an accurate acquaintance with the nature of things to ascertain all the *predicables* which bear relation to them. A moderate know-

ledge of their nature will indeed suffice to enable us to refer the *species* to its proximate *genus*. But it is difficult to decide which, among the various attributes and characteristics of any particular class of beings or of notions, is really the chief attribute, and the occasion of the inferior attributes: that is, which of them constitutes the difference and which the property. We readily refer *gold, silver,* &c. to the genus *metal; horse, cow,* &c. to the genus *animal; tulip, rose,* &c. to the genus *flower*. But it is impossible, in the present state of our knowledge, to decide which is that quality which essentially distinguishes each of those species from the other species comprised under the same genera. Naturalists are therefore compelled either to enumerate all the distinguishing qualities which they can discover in each; or to adopt an arbitrary mark of distinction instead of the essential difference.

5. *Accident, is that which is predicated in* Quale, *of several things differing either specifically or numerically, as contingently joined to their essence.*

For example: *Strength, learning, experience, virtue, speed, beauty, wealth,* &c. are accidents or contingent qualities to *man*. *Height, extent,* &c. to a *house*.

Species.	Body.	Proposition.
Genus.	Substance.	Sentence.
Difference.	Having solid extension.	Declaratory.
Property.	Occupying space.	True or False.
Accidents.	White.	Important.
	Large.	Trifling.
	Heavy.	Elegant.
	Opaque, &c.	Short, &c.

Genus.	Speaker.	Water from clouds.
Difference.	Understanding the art of persuasion.	Falling in drops.
Species.	Orator.	Rain.
Property.	Apte, distincte, ornate dicens.	Fertilizing the earth.
Accidents.	Grecian. Roman. Vehement, &c.	Cold. Violent. Excessive, &c.

Genus.	Surface.	Plane-figure.
Difference.	Bounded by one or more lines.	Having three sides.
Species.	Figure.	Triangle.
Property.	Enclosing space.	Having three angles.
Accidents.	Large. Small. Smooth, &c.	Equilateral. Isosceles. Right-angled, &c.

Patet 2°. *Genus* esse *Totum* quiddam, nempe *Logicum*, sive in modo loquendi: quatenus continet (i. e. prædicationis ambitu complectitur) species tanquam *partes* sui *subjectivas*. *Speciem* quoque *Totum* esse, nempe *Metaphysicum*, sive in modo concipiendi; quatenus continet (i. e. ad perfectionem sui postulat) Genus tanquam *partem* sui *essentialem*. Unde Differentia Generi accedens, dicitur *Genus* ipsum *dividere*, quatenus ejus significata distinguit; et *speciem constituere*, quatenus ejus essentiam complet.

A *Genus* is (logically speaking) *a whole;* that is, the *word* which represents a genus is applicable to a whole class, the parts of which consist of the several species which that genus comprises, or of which it is predicated. Thus, *Animal* is *the name of* a class, comprehending the species *man* and *brute;* of which it may be said, *All men are animals: all brutes are animals. Rectilineal figure* comprehends *triangles, quadrilaterals,* and *polygons;* the individuals under all these species being included in that genus.

A *Species* is (metaphysically speaking) *a whole;* that is, the abstract notion denominated a *Species* is a complex or aggregate idea; and is therefore resolvible into its component parts. These parts are the simple or less complex notions of the Genus and the Difference. Thus the idea of *Man* is formed by the combination of the ideas *animal* and *rational. Rhetoric* includes the two notions of *science* as its Genus, and *employed in discovering what is persuasive* as its Difference.

A *Species* may be referred, in different points of view, to different *genera.* Thus the *Tiger* may, by distinct processes of abstraction, be considered as belonging to the genus, *Felis;* or *Quadruped;* or *Asiatic animal;* or *Ravenous beast,* &c.

Many species have no appropriate name, but are expressed by the combination of their constituent parts, the Genus and Difference: for instance; *passive-quality, rectilineal-figure, right-angled-triangle, port-wine, greenfinch, water-fowl.* Others are denoted by the Difference alone, as, a *repeater,* (watch which strikes the hour,) *Madeira, Champagne.*

§. 6. *De Prædicabilium Speciebus.*

GENUS aliud *Summum,* aliud *Subalternum* est: *Species* quoque, in *Subalternam* et *Infimam* distinguitur. Genus summum, est quod

nulli, Species infima, quæ omni *cognato Generi* subjicitur: Genus vel Species subalterna, quæ et cognato Generi subjicitur, et de cognatâ Specie prædicatur. Voco autem *Cognata*, quæ ex iisdem Individuis perpetuâ abstractione colliguntur; ut *Homo*, *Animal*, *Vivens*, *Corpus*, *Substantia:* quæ ex *Socrate*, *Platone*, &c. expurgatis continue differentiis oriuntur.

It has been seen that the mind does not rest satisfied with the primary classification of individual objects. It proceeds to compare its abstract notions with each other, and to classify *them* also in the same manner. This process continues, until it has reduced every thing to one, or at the most to two general heads; for some proceed no further than *substance* and *quality*, as two collateral universals: while others, conceiving of the one as *that which exists independently of any other created thing;* and of the other as *existing only in connexion with some subject*, class them both under the notion expressed by *being*.

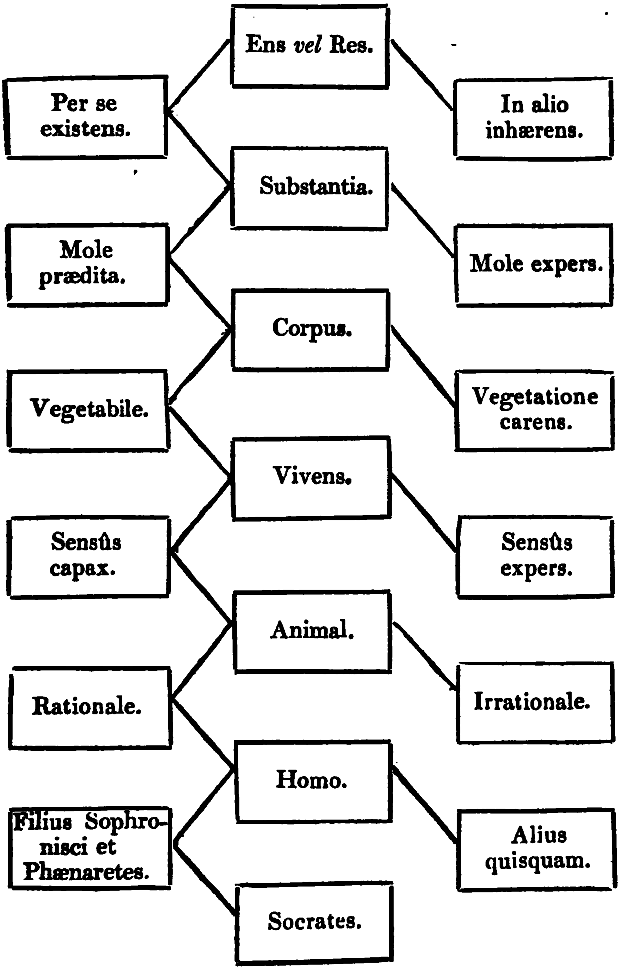
This most abstract notion is both the immediate genus comprehending *substance* and *quality;* and the ultimate genus of all those other intermediate notions through which the mind has, by successive abstraction from the original individuals, at length attained to it. It is therefore called the *highest*, the *ultimate*, or the *most universal* genus. It may be predicated affirmatively and universally of every cognate term; but no cognate term can be so predicated of it. Thus; All *substances* are *Beings;* All *bodies*, all *animals*, all *brutes*, all *lions* are *Beings*.

On the contrary, the first common nature of which the mind forms a conception from the comparison of individuals, is called the *lowest*, *primary*,

or *most specific* species. Every cognate term may be universally predicated of it; but it cannot be predicated in the same manner of any cognate term. For example; it is true that all *lions* are *quadrupeds*, are *beasts*, are *brutes*, are *animals*, are *corporeal*, are *substances*, are *organized*, are *beings*.

All the intermediate notions, (as well as the words which represent them,) are called *subaltern*. Like the subaltern officers in an army, or the intermediate steps of a ladder, each is at once superior to some, and inferior to others. Each may be employed as the *predicate* comprehending some *less* abstract cognate terms; and as the *subject* included in some *more* abstract cognate terms; each is a *genus* in relation to some *lower species;* and a *species* in relation to some *higher genera*. Thus the word *animal*, which is a *subaltern* term, may be *predicated* of some of its cognate terms; (as, all *lions*, all *quadrupeds*, all *beasts*, all *brutes* are *animals:*) and may also form a *subject* of which other cognate terms may be predicated; as, all *animals* are *endued with life*, are *corporeal*, are *substances*, are *beings*. In relation to these terms of which it is the subject, it bears the character and name of a *species:* in relation to the former, of which it is predicated, it bears the character and denomination of a *genus*.

This may be illustrated by a scale somewhat similar to that which was adopted by Porphyry for a different purpose, and which has acquired the name of Arbor Porphyriana. In this scale *Ens vel Res* is the highest genus: *Homo* the lowest species: the other terms in the same column are subaltern terms. On the left hand are the logical *differences* which distinguish each species from the collateral species belonging to the genus immediately above it: on the right hand are the differences of those collateral species which are not specified in the scale.


Ens *vel* Res.
Per se existens.
In alio inhærens.
Substantia.
Mole prædita.
Mole expers.
Corpus.
Vegetabile.
Vegetatione carens.
Vivens.
Sensûs capax.
Sensûs expers.
Animal.
Rationale.
Irrationale.
Homo.
Filius Sophronisci et Phænaretes.
Alius quisquam.
Socrates.

The following tabular illustrations may tend to a further elucidation of the subject.

Highest Genus.	Being.	Being.	Being.
Subaltern Genera and Species.	Substance. Body. Organized body. Animal. Brute. Beast. Quadruped.	Substance. Body. Organized body. Plant. Tree. Fruit-tree. Plum-tree.	Substance. Body. Organized body. Vegetable. Pentandria. Monogynia. Primula.
Lowest Species.	Horse.	Green-gage-tree.	Cowslip.

Highest Genus.	Being.	Being.	Being.
Subaltern Genera and Species.	Substance. Spirit. Bodiless Spirit.	Quality. Habit. Moral-Habit. Virtue.	Quality. Passive-quality. Colour. Blue.
Lowest Species.	Angel.	Temperance	Azure.

Properly speaking, there cannot be more than one Highest Genus, namely *Being* or *Entity;* which is a cognate term to every substance and quality which exists or can be supposed to exist. But a subaltern term may be relatively considered as a highest genus; as in the following examples, *Substance, Animals,* and *Mammiferous Animals,* express the most abstract ideas to which the process described in each extends; or vice-versâ, are the primary terms from which the combinations or distributions emanate.

- SUBSTANCE,
  - Spirit,
    - Angel,
    - Rational soul, &c.
  - Body,
    - Organized or living,
      - Animal,
        - Rational, . Man.
        - Irrational,
          - Beasts, . . Elephant. Lion, &c.
          - Birds, ... Eagle. Sparrow, &c.
          - Insects, . Wasp. Spider, &c.
          - Fishes, . . Shark. Salmon, &c.
          - Reptiles, Snake. Frog, &c.
          - Worms, . Leech. Snail, &c.
      - Vegetable,
        - Tree, ... Elm. Oak, &c.
        - Shrub, . . Holly. Privet, &c.
        - Herb, ... Corn. Mallows, &c.
    - Inorganized or lifeless,
      - Solids,
        - Minerals,
          - Stones, ... Granite. Oolite, &c.
          - Salts, ... Muriatic. Sulphuric, &c.
          - Inflammable, Bitumen. Diamond, &c.
          - Metals,
            - Perfect, Gold. Silver, &c.
            - Semi-metals, Zinc. Bismuth.
        - Animal Substances, Flesh. Bone, &c.
        - Vegetable Matter, Timber. Leaves, &c.
      - Fluids,
        - Ponderable, . . Air. Water, &c.
        - Imponderable, . Caloric. Light, &c.

Quare 1. *Differentia* est vel *Generica*, quæ constituit Speciem Subalternam; vel *Specifica*, quæ infimam: hæc est quæ de numero differentibus, illa, quæ de specie differentibus prædicatur. Exempla, *Sensibile* et *Rationale*.

It has been already shewn, that the *difference* joined with the *genus* constitutes a *species*. If that species be *subaltern*, (that is, such as is also a *genus* to some subordinate species,) the *difference* which constitutes it is denominated *generic*, and is predicated of all the subordinate species; thus, the difference, *occupying space*, is predicated of every thing concerning which *body* is predicated; namely, of the two species, *animate* and *inanimate body*. But the *difference* which constitutes a *lowest species* is called *specific*; for it applies only to the individuals comprehended under the species; that is, it is predicated of things differing numerically. Thus *rational* is predicated of all the individuals to which the name of the species *man* applies.

Genus.	*Difference.*	*Species.*
Substance.	Material or occupying space.	Body.
Body.	Having life.	Living thing.
Living thing.	Animate.	Animal.
Animal.	Suckling their young.	Mammalia.
Mammalia.	With separate toes on all four feet.	Digitata.
Digitata.	With angular front teeth.	Feræ.
Feræ.	Fore teeth equal: tongue prickly: & claws retractile.	Felis.
Felis.	Yellow black-streaked skin.	Tiger.

In column 1, the first line contains the highest genus; the others, subaltern genera.

In column 2, the last line contains a specific difference; the rest are generic differences.

In column 3, the last line contains the lowest species; the other lines contain subaltern species.

2. *Proprium* quoque, vel *Genericum* est, quod necessario comitatur essentiam Generis summi vel subalterni; atque ex illâ adeo fluere atque oriri dicitur; vel *Specificum*, quod fluit ab essentiâ speciei infimæ. Illud itaque de pluribus speciebus; hoc, de unâ specie et pluribus Individuis prædicatur. Exempla, *Mobile* et *Risibile*.

The distinction of *Property*, as *generic* or *specific*, is of the same nature with that of *Difference*. *The having three angles*, being the property of the subaltern genus *Triangle*, is a *generic* property: *the equality of the square of the hypothenuse to the squares of the sides*, being the property of the lowest species *right-angled-triangle*, is a *specific* property. Each kind of property is predicated of those objects which are comprehended in the genus or species of which it is the property: hence the property of a subaltern genus is predicated of all the *species* comprehended in that genus: that of a lowest species is predicated of all the *individuals* which partake of the nature of that species.

Shape is the *generic* property of *Body*.
Growth . . . . of *Living body*.
Voluntary motion . . . . of *Animal*.
Risibility is the *specific* property of *Man*.

Proprium etiam dicitur; 1, Quod convenit omni ejus Individuo sed non soli Speciei; ut

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Growth . . . . of *Living body*.
Voluntary motion . . . . of *Animal*.
Risibility is the *specific* property of *Man*.

Proprium etiam dicitur; 1, Quod convenit omni ejus Individuo sed non soli Speciei; ut

homini esse bipedem: 2, Quod omni, et soli; ut *homini risibilitas;* cujusmodi est quartum Prædicabile.

Property, in the strictly logical sense in which it is employed as the name of the fourth class of predicables, denotes a quality attached to every individual comprehended in the Genus or Species to which it is attributed, and not to any other objects. It is therefore an universal and an exclusive characteristic of the class.

But the word is also popularly used to denote any quality found in every individual of a class, although not exclusively confined to that class. Thus, *malleability, fusibility, yellowness, weight, value,* are said to be properties of *Gold: power of locomotion, capability of feeling pleasure or pain,* are vaguely called properties of *Man.*

Sometimes also the term *Property* is applied to qualities exclusively but not universally belonging to a class, (soli, sed non omni). In this sense, *philosophy, literature, virtue, prudence, hope of future existence,* are popularly but inaccurately called *properties* of Man.

Accidens, cum essentiæ junctum sit contingenter, adesse igitur vel abesse potest, salvâ interim essentiâ Speciei; Individuo tamen aliquando tam tenaciter inhæret, ut divelli atque separari nequit; ut *Mantuanum esse, a Virgilio.* Quare vocatur *Inseparabile.* Quod autem ab Individuo separari potest, ut *albedo, a pariete,* dicitur *Separabile.*

The *place of birth,* the *parents,* the *past events of life,* &c. are *inseparable* accidents to any *individual*

man. His *dress*, *posture*, *residence*, *opinions*, &c. are *separable* accidents.

That a *particular triangle is equal to another figure* is an *inseparable* accident; for if that equality be removed, the triangle is no longer the same.

The *PREDICAMENTS* or *CATEGORIES* are a certain enumeration of the several classes under which all abstract ideas, and their signs, common words, may be arranged. They are as follows:

1. *Substance;* either *material* or *immaterial.*
2. *Quantity;* either *continuous*, as lines, solids, surfaces, or as time; or *discrete*, as number, &c.
3. *Quality;* either *innate*, as the natural faculties; or *acquired*, as virtue, learning; or *sensible*, as form, sounds, colour, &c.
4. *Relation;* including the two *correlatives* and the *principle* of the relation.
5. *Action.*
6. *Passion;* including the transition either from *one place to another*, or from *one state to another.*
7. *Place.*
8. *Time*, past, present, and future.
9. *Posture*, whether *quiescent* or *active.*
10. *Habit* or *covering;* either *proper*, as *dress* to man, *skin* to beasts; or *figurative*, as *leaves* to trees.

They are enumerated and exemplified in these verses:

Summa decem: Substantia, Quantum, Quale, Relatio,
Actio, Passio, Ubi, Quando, Situs, Habitus.
Presbyter exilis, specie pater, orat et ardet,
In campo, semper rectus, et in tunicâ.

This classification was introduced by Archytas, and adopted by Aristotle. An acquaintance with it is useful, chiefly because it is so often alluded to both in ancient and modern writings.

§. 7. *De Divisione.*

QUEMADMODUM Nomen Singulare dicitur *Individuum,* ita et Commune *Dividuum* dici potest. Id enim *per Metaphoram* dicitur *dividere,* qui *plura ejus significata recenset;* nam in uno multa distinguit. Ita qui *animal* dicit esse (id est, vocabulum animal *significare*) *hominem* et *brutum,* dicitur *animal in hominem brutumque dividere.*

Quare *Divisio* est distincta enumeratio plurium quæ communi nomine significantur: Estque analoga distributioni totius in partes.

Logical *Division* is *A distinct enumeration of the several classes or individuals which are signified by a common name.*

Though it is *analogous* to Physical Division, or the distribution of a whole into its parts, yet the two kinds of division are totally distinct in their nature, and must by no means be confounded with each other. The physical division of *a tree,* for instance, consists in its distribution into *root, trunk, branches, leaves,* and *fruit;* but the logical division of *tree* is into subordinate classes, as, into *deciduous* and *evergreen;* or into *fruit-tree* and *timber-tree;* each of which may be further divided; *fruit-tree,* for in-

stance, (to omit intermediate divisions,) into *apple-tree, vine, orange-tree,* &c.; *timber-tree* into *oak, elm, ash,* &c.

Logical division may be thus distinguished from physical division. In the former the *divided-whole* may be universally predicated of each of the *dividing members;* as *all elms, all oaks, all beeches,* &c. are *timber-trees: all men, all brutes,* are *animals.* But this cannot take place in the latter. Moreover, physical division can be applied to *individuals* only; logical division only to *classes.*

To these two species of division may be added a third, which may be called *metaphysical* division. It consists in an analysis of the more simple ideas which form the component parts of a complex idea. This method is adopted, for example, when *Man* is contemplated, first in reference to those qualities which he possesses in common with other animals; and then, with reference to his distinguishing characteristics as man: that is, in other words, the idea of *man* is divided into the two parts, *animality* and *rationality.* Thus *repentance* has been divided into *conviction, contrition, confession,* and *forsaking of sin.* This process may be distinguished from *logical* division on the same principle as the *physical* division; namely, the thing-divided cannot be predicated of each part separately. It cannot be asserted that all *conviction* of sin, all *sorrow* for sin, all *confession,* or even all *forsaking* of sin is *repentance.*

Logical division is the converse of abstraction. The tables on pages 59, 60, and 61, illustrate both. If the terms are considered in the retrograde order, from right to left, that is, from the lowest species to the successive genera, they represent the process of *abstraction.* If read in the order in which they stand, from left to right, they represent the opposite process, namely *division.*

Animals may be logically divided into *rational* and *irrational:*

Or into *Gressilia*, *Volatilia*, *Natatilia*, *Reptilia*, and *Zoophyta*:

Or into *Mammalia*, *Aves*, *Amphibia*, *Pisces*, *Insecta*, and *Vermes*.

Gressile Animals may be divided into *Bipeds* and *Quadrupeds*.

Mental Operations are either acts of *Simple Apprehension*, of *Judgment*, or of *Reasoning*.

Virtues are classed under the heads of *Prudence*, *Justice*, *Fortitude*, and *Temperance*.

Or thus: *Virtues* are *moral* and *intellectual*. *Moral excellencies* or *virtues* are *courage*, *temperance*, *liberality*, *magnificence*, *magnanimity*, *meekness*, *courtesy*, *veracity*, *facetiousness*, *modesty*, *justice*. *Intellectual excellencies* are *art*, *science*, *wisdom*, *understanding*, *prudence*.

The lowest species may be divided either by an artificial classification, or by the enumeration of its individuals. *Men* may be divided into *civilized* and *uncivilized*: *white*, *black*, and of *intermediate colour*: *European*, *African*, *Asiatic*, *American*, and *Australian*: *learned* and *unlearned*. *Planets* may be divided into *those attended by satellites* and *those without satellites*; or by the enumeration of *Mercury*, *Venus*, *Mars*, &c.

Unde et nomen ipsum Commune dicitur *Totum Divisum*, et distincta ejus significata, *Partes* sive *membra dividentia*; et bene dividendi leges statuuntur tres.

1. Dividentia sigillatim arctius significent quam Divisum. Nam Totum est majus partibus singulis. 2. Dividentia conjunctim plus minusve ne significent quam Divisum. Nam Totum est æquale partibus universis. 3. Membra Divisionis sint opposita, (i. e. in se invicem

ne contineantur:) nam sine distinctione frustra est partitio.

1. Each member of the division should comprehend a smaller number of subordinate classes or of individuals than the subject or term divided.

To classify *animals* as *intelligent* and *not-intelligent beings*, would offend against this first rule; since each of those classes contains something not included in the word *Animal.*

2. The aggregate of all the members of a division taken together should comprehend every thing denoted by the divided term, and nothing more.

In the following passage Cicero (or probably the interpolator) offends against this rule. " Virtus omnis tribus rebus fere vertitur: quarum una est in perspiciendo quid in quâque re verum sincerumque sit: alterum, cohibere motus animi turbatos, appetitionesque obedientes efficere rationi: tertium, iis quibuscum congregamur uti moderate et scienter." (Off. ii. 5.) The parts together do not equal the whole. The virtue of *fortitude* is omitted. " Præterire aliquid maximum vitium in dividendo est."

3. An entire distinction between the parts or members is essential to a correct division. This rule is violated if the divisions be such that any individual or subordinate class may be arranged under more than one head.

The common division of the *Operations of the mind* into *Simple Apprehension*, *Judgment*, *Reasoning*, and *Method*, offends against the third rule. *Method* is not opposed to, but is comprised in, *Simple Apprehension.*

Lord Bacon points out an error of the same kind, when he says, " Differentiam Motûs *naturalis* et *violenti* maximâ cum socordiâ introducunt philosophi; cum omnis motus violentus etiam naturalis reverâ sit."

Much caution, indeed, is requisite to frame so accurate a division, that no one subordinate class or member shall interfere with another. Thus if a classification of *books* be made according to their subjects, into works of *divinity*, *law*, *arts and sciences*, *history*, and *belles-lettres;* it may be objected that *ecclesiastical history* may be indiscriminately arranged under the head of *divinity* or of *history;* and *grammar* and *rhetoric* under either *arts and sciences* or *belles-lettres*. Against the customary grammatical division of *words* or *parts of speech*, it may be urged that *pronouns* may be classed under the heads of *substantives* and *adjectives; participles* under *verbs* or *adjectives; interjections* under *adverbs, verbs*, and *substantives*. A similar objection has been adduced against the Linnæan arrangement of the vegetable kingdom; because every species which belongs to the classes *monœcia*, *diœcia*, and *polygamia*, is reducible to some one of the other classes. If the twenty-four classes are represented as the direct and immediate divisions of the general term *Plant*, the objection is valid, and may be extended to several of the other classes also. But the more scientific arrangement of Linnæus removes the objection. For he divides *Plants*, first, into those which *have*, and those which *have not*, *visible flowers;* (the *phænogamia and cryptogamia;*) the latter of which constitutes his twenty-fourth class. The former of these he subdivides into those which *have*, and those which *have not, the stamina and pistils in the same flower;* (*monoclinia* and *diclinia;*) the latter comprehending the three classes already mentioned; the former further divided into those which have the *stamina separated* or *not separated*, (*diffines* and *affines;*) these last being distributed into five classes; while the former are again sub-divided into those which have stamina of *indeterminate* and those which have them of *determinate relative length;* these comprehending the fourteenth and fifteenth classes, and those the first thirteen classes.

The difficulty of securing a perfect division is obviated when the subject admits of the dichotomy, or distribution constituted by the use of two contradictory terms; that is, of a definite term with its corresponding indefinite, as described on page 25. Thus, all matter is *organized* or *unorganized*. Of such divisions several examples occur on pages 59 and 60. Every correct twofold division implies this contradiction. The division of *history* into *sacred* and *profane* is equivalent to *sacred* and *not-sacred*. The division of *literary compositions* into *poetry* and *prose*, either signifies *poetry* and *not-poetry*, or else lies open to an objection; since a question might arise whether such works as Ossian and Telemachus do not belong to both, or to an intermediate class. Thus it is possible to conceive of the future discovery of some *warmblooded animals* which shall be neither *viviparous* nor *oviparous*; neither *mammiferous* nor *penniferous*, or even uniting both these characters. But according to the present state of knowledge and the probable inferences of legitimate induction, those distinctions are virtually the same as *mammiferous* and *non-mammiferous*; *viviparous* and *non-viviparous*.

The three rules above given are essential to the *correctness* of a division. But the *propriety* and *elegance* of the arrangement, as well as its adaptation to the memory, will depend much on the following additional rules. *All the members of a division should consist of collateral species;* and, *All the denominations of the several members should have reference to some common principle or leading idea.*

The latter of these requisites is wanted in Cuvier's arrangement of *mammiferous animals* into the following orders; *bimana*, *quadrumana*, *sarcophaga*, *rodentia*, *pachydermata*, *ruminantia*, *edentata*, and *cetacea*. In the classification of Blumenbach, the term *cetacea* does not coincide with the denomina-

tions of the other members of the division, as *bimana, quadrumana*, &c. (see pages 60, 61.) It may in general be observed, that those denominations of genera which are derived from the leading species contained under them, (as *cetacea, feles,*) are less satisfactory and scientific than the adoption of significant names. The botanical arrangement of Jussieu is faulty in this respect.

But the former of these two rules is of still greater importance. A genus should be distributed into the species immediately subordinate to it. These may, if necessary, be divided by a subsequent process into their respective subspecies. Thus, the division of *knowledge* into *sensible, rational,* and *artificial* knowledge is harsh and unsuitable. It should be first divided into *natural* and *artificial;* and the former branch may then be subdivided into *sensible* and *rational.* Again, *European Architecture* would be clumsily divided into *Grecian, Composite, Norman,* and *English.* It should be rather divided into *Grecian* and *English;* the former class into *pure* (comprehending the four orders) and *mixed or composite;* the latter class (*English*) into *Norman* and *pure-English;* this being also subdivided into *early, decorated,* and *perpendicular* English.

Cicero thus complains of the violation of this rule; "Quomodo autem philosophus (Epicurus) loquitur tria genera cupiditatum? *naturales et necessarias: naturales, non necessarias: nec naturales, nec necessarias?* Primum divisit ineleganter; duo enim genera quæ erant, fecit tria. Hoc non est dividere sed frangere rem. Qui si diceret, cupiditatum esse duo genera, *naturales* et *inanes:* naturalium quoque item duo, *necessarias* et *non necessarias;* confecta res esset. Vitiosum est enim in dividendo, partem in genere numerare."

But Cicero himself also errs "partem in genere numerando." He represents Panætius to have been

guilty of an offence against the second fundamental rule, in his threefold distribution of the subjects of *moral deliberation;* namely, de *honesto,* de *utili,* de *comparatione eorum.* To supply this supposed defect he adopts a more copious enumeration; namely, of *virtue or duty;* of *the relative obligation of different duties;* of *utility;* of *the relative value of different useful things;* and, of *the comparison between duty and utility.* And he adds, "Quam ille triplicem putavit esse rationem, in quinque partes distribui debere reperitur." The division of Panætius, however, seems most correct; the *absolute* and the *relative* obligation or usefulness of any actions, being the respective subdivisions of the two general classes, *de honesto* and *de utili.* Cicero appears unintentionally to have suggested this arrangement by his mode of summing up: "Primum igitur est de *honesto,* sed dupliciter: tum pari ratione de *utili:* post de *comparatione* eorum disserendum."

The same author falls into a still greater inaccuracy while in one part of his treatise on Moral Duties he represents *prudence* (defining it *the acquisition of science*) to be a part of one of the *subjects of moral deliberation,* (namely, the *honestum,*) and therefore necessarily comprehended under that general head; and yet afterwards distinguishes between the two as collateral species under the same genus. "Omnis autem cogitatio motusque animi, aut in *consiliis capiundis de rebus honestis et pertinentibus ad bene beateque vivendum,* aut *in studiis scientiæ cognitionisque* versabitur."

§. 8. *De Definitione.*

DIVISIONEM excipit (quæ per Metaphoram quoque dicitur) *Definitio;* cujus est, assignare conceptus et voces, quibus ea, quæ ab invicem

distincta volumus, velut agrorum fines, ex limitibus suis dignoscantur. Quæ cum definitis notiora esse debeant magisque obvia, Definitio vulgo dicitur *Oratio explicativa definiti. Oratio* (inquam) ut a nomine distinguatur; *Explicativa* quoque, nam et nomen *exprimit.*

The most superficial observer must have noticed how vaguely and indefinitely words are commonly employed. To the same word, some attach a greater number, others a smaller number of simple notions. Even the same person does this at different times, partly from inadvertency, and partly from necessity; as may be observed in the applications of *ratio* noticed in the illustrations of analogous nouns on pages 29, 30. Words are moreover often incorrect in their original application, having been primarily employed to represent ideas attained by an inaccurate process of abstraction; as the use of the word *heat* seems to have been derived from the erroneous consideration of the cause and the effect, as if they were one and the same. A similar observation may be made on the words *idea, positive and negative electricity*, &c. Hence *words* are among the chief occasions of inaccurate apprehensions and indistinct judgments. We are so habituated to their use, that we conceive the abstract notions to which they are applied to have been the natural and almost intuitive result of our own reflection, confirmed by universal acknowledgment, and therefore necessarily correct: while we are perhaps only following the vague application adopted by the thoughtless, or by some philosopher imperfectly acquainted with his subject. The importance of the distinction between the *primary* and the *secondary* intention of nouns originates in this ambiguity of language. Hence also arises the necessity of

Definition. It serves to shew what notions are to be included, and by inference what to be rejected, in each word: and thus to afford, as nearly as possible, a precise understanding of its meaning. Even thus, we can but imperfectly succeed in acquiring precision; not only because, in spite of the best definition, the mind will recur to the notions which it has previously been accustomed to apply to any particular term; but because the *instruments* of defining are still *words*, and therefore liable to the same ambiguity as the term defined. This circumstance renders a single word wholly incompetent to sustain the office of a definition. A synonym may explain, but cannot define a word. A combination of words affords a greater approximation to precision, because the ambiguity of each is in some measure corrected by its connexion with the rest. Even the definition of the term *Definition*, as given in the text, illustrates this ambiguity; since the word *sentence* is there employed, not in its common use, as a combination of words containing and relating to a finite verb: but, as Aristotle often uses it, for any combination of words, with or without a verb.

Definitio alia *Nominalis* est, quæ vocis significationem aperit; alia *Realis*, quæ rei naturam. *Realis* iterum vel *Accidentalis*, sive *Descriptio*, quæ definito accidentia (puta causas, effectus, proprietates, aliaque id genus) assignat; vel *Essentialis*, quæ partes essentiæ constitutivas. *Essentialis* denique, vel *Metaphysica* sive *Logica*, quæ Genus et Differentiam; vel *Physica*, quæ partes essentiæ physicas, i. e.

realiter distinctas: nam Genus et Differentia solâ mente distinguuntur.

- Definitio.
  - Nominalis.
  - Realis.
    - Accidentalis.
    - Essentialis.
      - Physica.
      - Logica.

E. g. Definitur Prædicabile *Nominaliter*, vox apta Prædicari. Homo, *Accidentaliter*, Animal bipes implume. *Metaphysice*, Animal rationale. *Physice*, Ens naturale constans corpore organico et animâ rationali.

Definition is
- Nominal.
- Real
  - Accidental.
  - Essential
    - Metaphysical.
    - Physical.

The four *lowest species* of definition are *Nominal, Accidental, Metaphysical,* and *Physical.*

It will be a more convenient arrangement, to illustrate the nature of *real* definition previously to that of *nominal* definition; and of the two branches of real definition to consider the *essential* before the *accidental.*

Essential definition assigns the *primary* and *essential* qualities or parts of the thing to be defined. But the parts or qualities thus assigned may be two-

fold; namely, either the *natural* and *constituent* parts of each individual comprehended under the common name; as the *wheels,* the *balance,* the *spring,* the *graduated dial,* the *hands,* &c. of a *watch:* or the *imaginary* and *metaphysical* parts which constitute the entire abstract notion represented by the word; namely, the genus and the difference; such as the notions of *time-keeper,* and, *adaptation to the pocket,* which are the metaphysical parts of the idea expressed by the word *watch,* and suggest the definition, *a pocket time-keeper.* This species of *essential* definition is therefore denominated *logical* or *metaphysical;* the other, *physical* or *natural.*

1. *Logical or Metaphysical Definitions* are the most perfect kind of definition, and when they can be ascertained should be employed in preference to all others. The following are examples:

Προαίρεσις, Βουλευτικὴ ὄρεξις τῶν ἐφ' ἡμῖν.

Ἀκολασία, Ἡ ἁμαρτία παιδική.

Ἀκολασία, Ἡ περὶ ἡδονῶν ὑπερβολή.

Ἄσωτος, Ὁ περὶ χρήματα ὑπερβάλλων.

Light, air reduced to its most subtle state.

Animal, vivens sensibile.

Belief, assent produced by apparent credibility.

Knowledge, assent produced by self-evidence, or demonstration.

Tree, a plant which supports itself by a woody stem.

Ἐστὶν ἡ ῥητορικὴ, δύναμις περὶ ἕκαστον τοῦ θεωρῆσαι τὸ ἐνδεχόμενον πιθανόν.

Ἡ ὀλιγωρία ἐστὶν ἐνέργεια δόξης, περὶ τὸ μηδενὸς ἄξιον φαινόμενον.

Πραΰνσις ἐστὶ κατάστασις καὶ ἠρέμησις ὀργῆς.

Πρᾳότης ἐστὶ μεσότης περὶ ὀργάς.

Medium Officium, id est, quod, cur factum sit, ratio probabilis reddi possit.

Life is the spontaneous propulsion of juices.

Heat is the sensation produced by caloric on animated bodies.

A Proposition is a declaratory sentence.

Parallelogram, a plane rectilineal four-sided figure, the opposite sides of which are parallel.

A logical definition is most complete when it consists of the term signifying the *proximate* genus, with that denoting the primary characteristic, or difference. But it may also be composed of a *more distant* genus with a succession of differences or distinguishing epithets. This is often rendered necessary by the poverty of language, which does not afford a name for every genus. Thus the proximate genus of *parallelogram* has no appropriate name. The class to which that genus is subordinate is likewise nameless. It is necessary therefore to go back to a still more abstract term, *figure:* to which a difference or epithet is added, to constitute the subordinate class or species, *plane-figure.* This term is then employed as the name of a genus, and is accordingly limited by another difference, *rectilineal.* The aggregate, *rectilineal-plane-figure,* is further reduced to a subordinate class by the addition of *four-sided.* The whole compound word, *four-sided-rectilineal-plane-figure,* represents the proximate genus of *parallelogram,* to which it only remains to append the specific difference, *having-its-opposite-sides-parallel.* Sometimes this method is resorted to for scientific purposes. So *man* instead of being declared to be a *rational animal,* may be logically defined, *a being endowed with independent existence, definite form, solidity, organization, life, sensation, and reason:* the aggregate of all the ideas except the last constituting that which is denoted by the term *animal.*

2. The other class of *essential definitions* consists of those which enumerate the constituent parts of

the individual objects defined: and are therefore called *physical* or *natural definitions.*

These are best adapted for the explanation of those species of which the individuals are familiarly known, and obviously reducible to their natural parts. They partake of the character of logical definitions, because they commence with the mention of a genus, and most properly, the proximate genus; while the enumeration of the parts supplies the place of a logical difference; as,

Bird, an animal consisting of a body covered with feathers, two wings, two legs and feet, and a head terminating in a horny bill.

Tree, that which consists of root, trunk, branches, leaves, and sap.

Chair, a machine which is composed of a seat, a back, and legs.

Ink, a mixture of copperas, gall, and gum.

Entablature, the architrave, frieze, and cornice of a pillar.

3. *Accidental Definition,* usually called *Description,* is the remaining species of *Real* Definition. It describes the *object* or *thing* denoted by any word, by assigning some characteristic, though not primary, qualities belonging to it. It is, very frequently, the only method by which an object can be defined, in consequence of our ignorance both of the natural and component parts, and also of the metaphysical parts; especially of that leading quality which constitutes the logical Difference. Thus we *define* or rather *describe* animals, plants, minerals, and other natural objects, by an enumeration of their respective qualities or accidents. Definitions of this kind are indeed usually introduced by the mention of the genus; to which is added a sort of artificial difference consisting of such a specification of characteristics as may suffice to distinguish the object defined from every collateral species. For example,

Silver, a metal of a white colour, less ductile than gold; more elastic than gold, lead, or tin, but less so than copper; more sonorous than any other metal except copper; soluble in nitric acid; and turned to a yellowish-black colour by the vapour of sulphur.

A *Watch* is a machine to shew the progress of time; moved by a spring, and adapted to the pocket.

Heat is the sensation produced by friction, exercise, or approaching near fire.

Animal, an organized living body, endued with sensation.

Animal, a being which possesses the power of spontaneous motion, and the life of which is sustained by means of food.

Dog, a quadruped distinguished by six fore teeth and six grinders in the upper jaw, and six fore teeth and seven grinders in the lower jaw.

Dog, the most intelligent, and faithful, and affectionate of domestic animals.

Honey, a viscous vegetable fluid, of a whitish or yellowish colour, sweet to the taste, soluble in water, and becoming vinous on fermentation, inflammable, liquable by a gentle heat, and of a fragrant smell.

Tree, that which shoots out into leafy branches.

Ink, a liquid used for the purposes of printing and writing.

Light, the material medium of sight.

4. *Nominal definitions* are those the object of which is, not to describe the nature of the *thing* intended by the word, but to explain the mere signification of the *word* itself. They differ from the several species of *real* definitions, not by their form, but by their object and purpose. With regard to each of the examples of definition already given, if the end in view is to adduce characteristics by which the *object* defined may be ascertained and re-

cognized, it is *real;* and belongs to its *respective* class, whether *logical, physical,* or *descriptional.* But if the intention of the definition is simply to prevent a misapprehension of the precise meaning of the *word,* the same definition is *nominal.* Definitions of the mental operations, and, in general, of all technical and scientific terms, (as of words used in divinity, physics, mathematics, &c.) are for the most part *nominal:* their object being only to avoid ambiguity by stating in what sense each word will be employed; that is, of what notions it is to be the sign. If therefore one author defines *conception, a notion of any object whether real or fictitious;* another, *a notion excited by any object of sensation;* and another, *a notion excited by any absent object of perception or sensation;* it cannot be asserted that any one of them is actually wrong in his definition; for he merely states the meaning in which he employs the word. But that writer will be deemed most judicious whose definition least deviates from the generally received application of the word. The observations and examples on *nouns of secondary intention,* (pages 35—37.) will further illustrate the use of nominal definitions.

Definitions derived from etymology are most frequently, although not exclusively, *nominal;* being usually adduced to elucidate the original import of the *word* defined: for example,

Animal cui est *anima.*

Fides ita appellatum est, *quia fiat quod dictum est.*

Ὀνομάζεται Δίκαιον, ὅτι δίχα ἐστὶν, ὥσπερ ἂν εἴ τις εἴποι δίχαιον, καὶ ὁ Δικαστὴς, διχαστής.

Ἀκολασία, τὸ τῆς κολάσεως δεόμενον.

Προαιρετὸν λέγεται ὡς ὂν πρὸ ἑτέρων αἱρετόν.

Parallelogram, a figure composed ἐκ γραμμῶν παραλλήλων.

Light, the fluid substance which is *lightest,* or possesses the smallest degree of weight.

Qui *sapientiam expetunt, philosophi* nominantur; nec quidquam aliud est *philosophia*, si interpretari velis, præter *studium sapientiæ*.

A dictionary of any language is a collection, partly of words nearly synonymous, partly of *nominal definitions*. For although many of the explanations given may be logical, physical, or descriptive definitions, yet the lexicographer employs them merely for the purpose of shewing the meaning of the word.

Bonæ Definitionis leges potissimum tres sunt. 1. Definitio sit adæquata definito: alias non explicat definitum. Quæ enim angustior est, explicat tantum *partem*, cum definitum sit *totum;* quæ laxior, explicat *totum*, cum definitum sit tantum *pars*. 2. Ut *per se* clarior sit et notior definito: alias non explicat omnino. *Dico* tamen *per se*, quia *per accidens* potest minus intelligi quod notius est suâ naturâ. 3. Ut justo vocum propriarum numero absolvatur: nam ex metaphoris oritur ambiguitas, ex nimiâ brevitate obscuritas, ex prolixitate confusio.

1. The first rule requires that the definition be *co-extensive* in signification with the word or object defined. It therefore expands into two branches.

A definition may comprehend *less* than that which it professes to define; and thus describe a *part* only instead of the *whole*. For instance:

Mankind is a race of civilized beings. This definition excludes *uncivilized* nations, and therefore describes only a *portion* of mankind.

Laws are ordinances enjoined by the united authority of the King and the two Houses of Parliament.

This definition is unduly limited to the *laws of Great Britain*. The following are also inaccurate:

Clock, an instrument which tells the hour by a stroke upon a bell.

Member, a limb or portion of the human body.

Saddle, a seat placed on a horse for the accommodation of the rider.

Rick, a regularly arranged pile of corn secured from the wet by a thatched roof.

On the other hand, that which is intended to be a definition may be too extensive, and comprehend *more* than the object defined. It then describes a *whole* instead of a *part;* it represents a genus of which the object itself is a species. Such are the following:

Man is an intelligent creature.

Trees are erect plants bearing foliage.

Chair, a moveable seat.

Fish, an animal which inhabits the waters.

Nectarine, a fruit of the plum kind.

2. The second rule requires that the definition shall be expressed in words which are in themselves more simple and better known than the object which it is intended to explain.

The words employed in a definition should therefore, if possible, be more abstract than the name of the thing defined. For words expressing less complicated notions are *absolutely* (per se) more perspicuous than those which denote more complex notions. Hence the most perfect definitions are those which are composed of the genus and difference. For instance, although use has rendered the words, *man, fish, animal*, more familiar to us than their respective definitions, *rational animal, impulmonary vertebrated animal, organized body;* yet the terms of these are in their own nature more clear and better known. The same may perhaps be said, (with the exception of the one word, *reticulated*,) in defence of Dr. John-

son's definition of *net-work;* namely, *Any thing reticulated or decussated with interstices between the points of intersection.*

On the contrary, the name of a *species*, (being necessarily the representative of a more complex notion than that of the *genus* to which it belongs,) is incompetent to form a part of the definition of the genus. An enumeration of the species would form a correct definition as to extent, but would violate this rule of perspicuity. Thus it would be illogical to define *Vegetables: a class comprehending trees, shrubs, and herbs.*

Collateral species of the same genus (as *bird, beast, fish*, &c.) and correlative words (as *right, left; fruit, fruit-tree; definitum, definitio*), are in their own nature equally known; and therefore cannot be correctly employed to explain each other. Hence the following are inaccurate:

Apple; the fruit of the apple-tree.

The right hand; not the left.

Definitio; Oratio explicativa definiti.

Network; any thing reticulated.

Judgment; that which is expressed by the combination of words into a sentence.

Triangle; a figure which has any of its exterior angles equal to its two interior and opposite angles.

Beast, an animal distinguished from birds, insects, fishes, and men.

Words expressive of ideas purely simple cannot be properly defined. Hence the definitions of the operations of the mind are less clear, or at the best not more clear, than the operations themselves: they in fact do little more than substitute one denomination for another.

In many other cases also the great difficulty of framing a correct definition renders a violation of this rule almost unavoidable. In nominal definitions, especially, a great degree of latitude may be allowed; and it is often sufficient if words relatively better

known are employed. Lexicographers cannot always secure even this: and are compelled to be content with conveying the notion in any other words, without regard to logical correctness.

3. The third rule comprehends two distinct requisites of correct definition.

The first branch of it requires that definitions should be expressed in a suitable number of words; in opposition to prolixity or excessive brevity. The following are consequently improper.

Money is that useful species of property, which, by serving as a common measure by which all the necessaries, all the conveniences, and all the luxuries of life may be estimated and procured, becomes itself the great essential, and comprises within itself all that can be thought needful to render life desirable.

Money is coin.

The second requisite contained in the third rule is that definitions should be expressed in *proper* (as opposed to *metaphorical*) words. The following instances are therefore inaccurate.

Money is the servant of the wise and virtuous, but the master of the wicked and the unwise. In the hands of the former it is the tool or instrument by which he performs innumerable acts of virtue; while in the hands of the fool it is the productive root of vice, shame, and misery.

Judgment is an operation by which the mind, sitting as on a tribunal, passes sentence on the agreement or disagreement of any two objects.

Memory is the storehouse of our ideas.

Astronomy is the science which instructs us in the laws or rules that govern the heavenly host, and by which their motions are directed.

It must however be observed, that injustice is done

to an author if that which he intended merely as a general illustration, or reference to some property of his subject, be mistaken for a definition. Thus Locke employed the above assertion concerning *memory* as an illustration, not as a definition. And the same was probably the object of the respective authors from whom are quoted the definitions (improperly so called) of *Money* and of *Astronomy*. In like manner St. Paul does not *define* Faith, when he teaches that *Faith is the substance of things hoped for, the evidence of things not seen;* but he simply states a prominent characteristic or quality of that grace, which he proceeds to illustrate by an accumulation of examples.

CAP. II.

DE PROPOSITIONE CATEGORICA PURA.

§. 1. *Quid sit Propositio.*

SECUNDA Pars Logicæ agit de *Propositione;* quod est signum secundæ operationis Intellectûs, sive Judicium verbis expressum.

Quare, ad Propositionem legitimam requiritur,

1. Quoad vocem, ut sit *Oratio affirmans vel negans,* quæ est ejus *essentia.*

2. Quoad sensum, ut *verum vel falsum significet,* (id scil. quod res est, vel secus, dicat,) quod essentiæ necessario nexum, et proinde *proprietas* est. Unde et

3. Non est ambigua; sic enim orationes esset. Nec 4. Solœca vel mutila; sic enim nihil significaret.

Quare, Propositio legitima, est *Oratio Indicativa,* verum vel falsum significans, sine ambiguitate, congrua et perfecta.

1. The definition, *A sentence which either affirms or denies,* or, *A declaratory sentence,* comprises the complete abstract notion of *Proposition.* For *Propositions* form one of the species comprehended under the genus, *Sentence;* and they are distinguished from all the collateral species, (as interrogatory, imperative, &c.) by the difference *declaratory,* or

indicative; that is, *expressing either an affirmation or a negation.*

The following sentences are not declaratory; and consequently are not propositions.

Can envy dwell in heav'nly breasts?
Tu modo posce deos veniam.
Hic murus aheneus esto,
Nil conscire sibi.
Heu! hominum ignaræ mentes!
Quando fortuna non mutat fidem?
Da spatium vitæ, multos da, Jupiter, annos.

The following, on the other hand, are *Propositions;* since they either affirm or deny:

Deep disappointment lurks in every prize.
Est modus in rebus.
Nullus argento color est, nisi temperato splendeat usu.
Quod honestum non est, id non decet.

Propositions are frequently so combined as to form a complex sentence; as,

Gold and silver are pure metals: that is, *gold is a pure metal,* and, *silver is a pure metal.*

Unsought advice is the dictate of presumption, and appears to convey implicit censure: which contains two propositions, each predicating something different concerning the subject, *Unsought advice.*

Neither death, nor life, nor angels, nor principalities, nor powers, nor things present, nor things to come, nor height, nor depth, nor any other creature, shall be able to separate us from the love of God. This sentence contains as many propositions as there are subjects; the same predicate, *shall be able,* &c. being applied to each.

2. The quality of *necessarily signifying either that which is true or that which is false,* is the logical property of a Proposition. For it is the immediate

and natural consequence of its *difference*, namely affirmation or negation.

To *be* true or false is the property of *judgment*; to *signify* what is true or false is therefore the property of *propositions*. Those epithets are improperly used, when applied to any operation of the mind not comprehended under judgment.

3. An *ambiguous* sentence is in fact a *double* sentence. Ambiguity may be occasioned either by the equivocal sense of the words, or by the dubious construction of the sentence.

The heathen oracles afford numerous instances of both these kinds of ambiguity; as,

Κροῖσος Ἅλυν διαβὰς μεγάλην ἀρχὴν καταλύσει· which left it doubtful whether the kingdom of Persia or of Lydia was to be destroyed. (*Herod.* i. 74.)

Ἥξει Δωριακὸς πόλεμος καὶ λοιμὸς ἅμ' αὐτῷ· where the ambiguity consists in the similarity of sound between λοιμὸς and λιμός. (*Thuc.* ii. 54.)

Τὸ Πελασγικὸν ἀργὸν ἄμεινον. (*Thuc.* ii. 17.)

Antiquam exquirite matrem. (*Æn.* iii. 96.)

Comic writers abound with ambiguous sentences, intended to be strictly more than one sentence, that is, to be understood in different senses; as,

Ὦ γύναι, λίαν σπαθᾷς· You are *very diligently weaving*; or, you are *living very extravagantly*. (*Ar. Nub.* 55.)

Γαλήν' ὁρῶ· I see (τὰ γαλήνα) *a calm*; or (γαλῆν) *a weasel* or *cat*. (*Eur. Or.* 279. *Aristoph. Ran.* 306.)

Thus Cicero represents the Sicilians as saying, *Non mirandum est jus tam nequam esse Verrinum:* describing the *mode of administering justice practised by Verres* in words which also signify *boar-broth*. (*Verr.* i. 46.)

Many passages in ancient authors appear ambiguous because we are not sufficiently acquainted with the idiom of their language or with allusions

which were familiar to those for whom they wrote. A Roman would probably have found no ambiguity in the line, *Hœdorumque gregem viridi compellere hibisco.* (*Virg. Ecl.* ii. 30.) *To lead the flock to the green mallows;* or, *to drive the flock with a green rush or twig*. The sentence, (*Il.* iv. 306.)

Ὃς δέ κ' ἀνὴρ ἀπὸ ὧν ὀχέων ἕτερ' ἅρμαθ' ἵκηται,
Ἔγχει ὀρεξάσθω· probably owes its difficulty to our ignorance, rather than to any obscurity in the language of the poet.

The clause, *Dum pelago desævit hyems*, (*Æn.* iv. 52.) when not limited and explained by its context, may signify, *While the storm is raging;* or, *Till the storm cease*. Thus also, *Nec, dum desæviat ira, expectat*. (*Luc.* v. 303.)

Οὐρῆας μὲν πρῶτον ἐπῴχετο· (*Il.* i. 50.) i. e. *He first attacked the mules;* or, according to some critics alluded to by Aristotle, *the sentinels*.

Again: *Every shepherd tells his tale*, is by itself ambiguous: the context fixes the meaning to be, is engaged in his evening employment of *counting over his sheep*.

Lumina morte resignat; closes, or *uncloses the eyes:* or, *destroys the power of sight*. (*Æn.* iv. 244.)

Ambiguity is also occasioned when a word or clause admits of a variety of construction, or of punctuation; as, Μαχεσάμενοι ἐπὶ πλεῦν ἢ πρότερον ἑσσώθησαν. (*Her.* v. 120.) *After having fought more strenuously than before, they were vanquished;* or, *after having fought, they were more decidedly vanquished than on the former occasion*. This frequently occurs in the use of negative and exceptive particles; as, *The cavalry only proceeded to the neighbouring village;* that is, either, *the cavalry alone, without the infantry, proceeded, &c.;* or else, *the cavalry proceeded to the neighbouring village, and no further*.

4. The *ungrammatical* expressions of the illiterate

are not real propositions; nor are any combinations of words in which there is not a distinct subject, predicate, and copula, either expressed or obviously implied. *A word to the wise*, is mutilated and incomplete in form, but not in sense. The same ellipsis is adopted in the Latin, *Verbum sat supienti.* The corresponding French proverb is complete in form as well as in sense, *Le sage entend à demimot.*

§. 2. *Propositionum Species.*

EJUS Divisiones variæ sunt:

- Propositio.
  - Categorica.
    - Pura.
    - Modalis.
  - Hypothetica.
    - Conditionalis.
    - Disjunctiva.

PROPOSITIONS are divided according to their
- Substance, into
  - Categorical, . . Pure. Modal.
  - Hypothetical, . Conditional. Disjunctive.
- Quality, namely,
  - Essential, into Affirmative. Negative.
  - Accidental, into True. False.
- Quantity, into
  - Universal.
  - Particular.
  - Singular.
  - Indefinite.

1. *Categorica* est, quæ enuntiat absolute; ut, *Homo est risibilis. Hypothetica*, quæ sub

conditione; ut, *si homo est rationalis est risibilis. Vel dies est vel nox.*

Quod Categorica dicit, nihilo nexum est; quasi per se *subsistens:* quod Hypothetica, conditioni *substat.* Unde et hæc Divisio peti dicitur a *Substantiâ* Propositionis; et per ejus membra respondetur interroganti, *Quæ est Propositio?*

Categorica rursus dividitur in *Puram* et *Modalem.* Hypothetica in *Conditionalem*, *Disjunctivam*, &c. Categorica pura, sive *Propositio de inesse*, est quæ pure affirmat vel negat; i. e. simpliciter dicit Prædicatum inesse, vel non inesse, subjecto; ut, *Homo est animal. Homo non est lapis.* Modalis, quæ cum *Modo*, h. e. vocabulo exprimente quomodo Prædicatum insit subjecto; ut, *Necesse est hominem esse animal. Impossibile est hominem esse lapidem.* De Categoricâ purâ, et quidem solâ, impræsentiarum loquor; de cæteris alibi dicturus.

1. *Pure Categorical Propositions* consist of a simple affirmation or denial, without any condition or qualifying expression; as,

Order is the life of despatch.

Affected despatch is a most dangerous thing.

Some of the wiser heathens discerned the absurdity of polytheism.

Some authors are not perspicuous.

Nemo est ab omni parte beatus.

Is, quisquis est, qui moderatione et constantiâ quietus animo est, sibique ipse placatus, ut nec tabescat molestiis, nec frangatur timore, nec sitienter quid expetens ardeat desiderio, nec alacritate futili gestiens deliquescat, is est sapiens, is est beatus.

These propositions purely declare the existence or non-existence, in the subject, of the quality, character, or imaginary abstract nature, denoted by the predicate. In the last example, (which contains two propositions,) the quality of *being a wise man*, and that of *being a happy man*, are respectively asserted to be attached to the subject, *is qui moderatione, &c.* The preceding proposition declares that the attribute, *enjoying perfect happiness*, does not exist in *any man*. Thus again the aggregate notion of, *persons discerning the absurdity of polytheism*, is included in, and forms a part of, the notion expressed by, *some of the wiser heathens*: that is, *Some of the wiser heathens* possessed the quality denoted by the words, *discernment of the absurdity of polytheism.* Hence such sentences are known by the barbarous name, propositions *de inesse*; that is, denoting the *in-being* of the quality represented by the predicate *in* the class or thing expressed by the subject.

2. *Modal Categorical Propositions* have the affirmation or negation qualified or modified by some words expressing necessity, possibility, impossibility, probability, or improbability. Of this kind are:

De quo omnium natura consentit, id verum esse necesse est.

Corpus mortale interire necesse est.

It was necessary that the patterns of things in the heavens should be purified with these: but the heavenly things themselves with better sacrifices than these.

Riches may possibly be applied to the best of purposes.

It is not possible that an unholy man can enter heaven.

It is impossible to check the wanderings of thought.

Fortune probably depends more on external accidents than on human sagacity.

It is obvious that such propositions may be considered as *pure* categoricals. For the sense of the word by which the mode is expressed may be conveyed by joining a corresponding adverb to the predicate; or the modal word itself may be considered as the predicate, the leading portion of the sentence being the subject. Thus it may be said, *Corpus mortale est res-necessario-interitura;* or, *Corpus mortale interire est res-necessaria. The application of riches to the best of purposes is a thing possible. That fortune depends more on external accidents than on human sagacity is a probable fact.*

3. *Conditional Hypothetical Propositions* are complex sentences composed of two categorical propositions connected by a particle denoting a supposition. They do not actually assert or deny any thing, except the fact of the dependence of one of the propositions on the other: as,

Ambitious men, if they be checked in their desires, become secretly discontent.

Cum consequens aliquod falsum est, illud cujus consequens est non potest esse verum.

4. *Disjunctive Hypothetical Propositions* consist of a combination of categorical propositions, so connected by disjunctive or distributive particles as to imply that one of those propositions alone is true and the others are false: as,

Aut Epicurus, quid sit voluptas, aut omnes mortales, qui ubique sunt, nesciunt.

Either your brethren have miserably deceived us, or power confers virtue.

This globe must either be destroyed or stand eternally.

2. *Affirmativa*, est cujus Copula affirmativa est; ut, *Homo est animal. Non progredi est regredi. Negativa*, cujus negat; ut, *Homo non est lapis. Nullus avarus est dives. Vera*, quæ quod res est dicit; ut, *Homo est animal. Falsa*, quæ secus; ut, *Homo est lapis.* Et cum per hasce species bene respondeatur interroganti, *Qualis est Propositio?* (respondent enim per Differentiam et Proprium quæ in quale prædicantur) dicuntur hæ duæ divisiones peti a *Qualitate* Propositionis. Prior a *Qualitate Vocis*, sive *Essentiali;* Posterior a *Qualitate Rei*, sive *Accidentariâ*.

The *primary* quality or logical *difference* of Propositions consists in being *declaratory*. The chief *secondary* or subordinate quality, that is, the logical *property*, consists in *the necessity of expressing what is either true or false*.

Propositions admit of two distinct classifications corresponding with these two kinds of quality.

1. The classification which originates in the logical *difference* is into *affirmative* and *negative* propositions. These terms therefore denote the *essential* quality; affirmation or negation being the distinguishing or characteristic part of that *imaginary abstract nature* which is technically called the *essence* of propositions. This is also called the quality of the *word* or the *expression*, because it has immediate reference to the form in which they are expressed. Thus, *The soul is immortal; The soul is not mortal;* although they convey the same meaning, differ in *essential quality;* the former being *affirmative*, the latter *negative*.

The *essential* quality of a proposition is determined by the *copula.*

The following are *affirmative propositions;* because their extremes are united and compared by means of the affirmative copula:

Extraordinary expense should be limited by the worth of the occasion.

All philosophers profess to aim at the discovery of truth.

Some of the primitive rocks contain metallic ores.

In *Negative Propositions,* on the other hand, the adverb of negation forms part of the Copula: as,

A modest man cannot allege his own merits.

None can excel in every branch of science.

Costly followers are not to be liked.

No man can obtain great advantages who is afraid of petty inconveniences.

Some plants will not grow out of their native soil.

A proposition is not negative unless the particle of negation immediately affects the copula. The following propositions are therefore affirmative:

I will provoke you to jealousy by them that are no people, (ἐπ' οὐκ ἔθνει.)

Secuta est honestam causam non honesta victoria.

Non injussa cano: I sing *things-not-uncommanded.* (*Virg. Ecl.* vi. 9.)

Οὐ δίκαια δρᾷς. Thou doest *things-not-just.* (*Soph.*)

Sententia sæpe acuta non acutorum hominum sensus prætervolat. (*Cic. de Orat.* iii. 223.)

Omnes insipientes sunt non sani. (*Cic. Tus. Qu.* iii. 5.)

Χάρις γὰρ οὐκ ἄτιμος εἴργασται πόνων. *A not inglorious recompense of their toils is accomplished.* (*Æsch.*)

He that eateth not, to the Lord he eateth not.

Ἀπιδοκίμασαν τὴν τῆς Λευκάδος οὐ περιτείχισιν. (*Thuc.*)

Αἰτία τοῦ πολέμου ἦν τοῦ φόρου ἡ οὐκ ἀπόδοσις. (*Thuc.*)

Nova in rempublicam merita non usitatis vocabulis honoranda. (*Tac. Ann.* xi. 25.)

He who is not dishonest ought to be treated with confidence.

It may occur that a proposition, which by itself would be rightly deemed negative, is in the course of an argument employed affirmatively. If, after having laid down the last position, it should be added, *But the neighbouring miller is not dishonest; he therefore ought to be treated with confidence;* the former of these two propositions must in this connexion be accounted affirmative, the negative particle being used solely to qualify the term *dishonest;* as if it were thus expressed, *Every not-dishonest-man ought to be treated with confidence: but the neighbouring miller is a not-dishonest-man.* The sentence, Οὐδεὶς ἀνθρώπων ἀδικῶν τίσιν οὐκ ἀποτίσει, is negative, if οὐκ is considered as combined with the verb: if otherwise, it is affirmative. (*Herod.* v. 56.)

In this manner also every negative proposition may be considered as affirmative; by connecting the symbol of negation with the predicate. For example, the proposition, *No species of worm has legs or wings,* may be thus enounced, *Every species of worm is destitute of legs and wings. Some fruits are-not pulpous; Some political constitutions do not secure the liberty of the subject;* are equivalent to, *Some fruits are not-pulpous, Some political constitutions are constitutions which do not secure the liberty of the subject,* or, *fail to secure the liberty of the subject.*

Some propositions are of a mixed nature; consisting of an affirmative which comprises a negative; or of a negative comprising an affirmative. For instance, *Man alone destroys those of his own species;* that is, both, *Man destroys his own species;* and, *No other creatures destroy those of their own species. I did not strike him intentionally;* that is, *I did strike him;* and, *I did it not intentionally.*

Τῶν μέν νυν ἐν Θεσσαλίῃ ποταμῶν, Ὀνόχωνος μοῦνος οὐκ ἀπέχρησε τῇ στρατιῇ τὸ ῥέεθρον, πινόμενος. (*Herod.* vii. 196.)

2. The classification of propositions into *true* and

false flows from the property, which is the secondary attribute; and is therefore called the *accidental quality*. And because this quality refers to the sense and meaning of the sentence, it is also called the quality of the *thing*.

To ascertain the truth or falsehood of a proposition is not the office of Logic, but of that science to which the subject-matter of the proposition belongs: as, *The sun is a mass of ice. The sun is an entire globe of fire. The sun is composed of ignited matter. Pride is wholly sinful. Some kinds of pride are honourable and right. Basalt is of igneous origin. Basalt is of aqueous origin.*

When the term *quality*, in reference to propositions, is employed without any distinguishing epithet, the *essential* quality, or affirmation and negation, is signified.

3. *Universalis*, est quæ subjicit nomen commune (cum signo universali, *omnis*, *nullus*, &c. adeoque) pro universis suis significatis distributive sumptum. *Particularis*, quæ nomen commune (cum signo particulari, *aliquis*, *quidam*, &c. adeoque) ex parte tantum significans. *Singularis*, quæ nomen (vel sponte, vel ex signo saltem) Individuum; ut, *Socrates legit. Hic homo est doctus. Indefinita*, quæ (nomen commune sine signo, et proinde) anceps: nam, manente formulâ, vim recipit diversam; ut, *Homo est animal*, nempe *omnis: Homo est doctus*, *aliquis* scilicet.

Petitur hæc Divisio a *Quantitate* Propositionis; nempe numero eorum pro quibus *sub-*

jectum supponit: unde et per has species bene respondetur interroganti, *Quanta sit Propositio?*

The *quantity* of a proposition depends on the extent in which its *subject* is applied. If the subject signifies some one object only, the proposition is *singular*. If it is a word signifying many things, (that is, a common noun,) and is so employed as to denote them all, the proposition is *universal*. If the subject signifies many, but is by some adjunct limited to a portion of them only, the proposition is *particular*. If the extent of the subject is to be known only by the sense, and not from the form of the expression, the proposition is *indefinite*.

A term, whether it be subject or predicate, is said to be *distributed* or *universal*, when it is used in its widest extent, and applied without limitation to every individual signified by it. But when limited to a portion of the aggregate of individuals which it signifies, the word is said to be *undistributed*, *partial*, or *particular*.

1. *Universal Propositions* have an *universal* subject. Thus, *all crystals are angular*, predicates *angularity* of every individual thing comprehended under the subject *crystal*. *None of the primitive churches were without bishops*, denies *the absence of episcopacy* concerning every one of *the primitive churches*. The same *universal* application of the predicate to the subject will be found in the following examples:

All the metals are fusible by heat.

Every intelligent being is responsible for his conduct.

No bad consequences can eventually proceed from compliance with the laws of our country.

There does not exist a man who is not ignorant concerning some useful topic.

All men think all men mortal but themselves.

No human foresight can check the advance of old age, infirmities, and death.

None but wise men are exempt from prejudice.

Wise men alone are exempt from prejudice.

No unwise men are exempt from prejudice.

All who are exempt from prejudice are wise men.

Universal propositions are frequently not so extensive in their application as they appear to be; a more *limited* subject being implied in the context: as,

Every thing shall be candidly acknowledged; meaning, *all the facts relating to the question under consideration.*

Παρεσκεύαστο πάντα· That is, *Every thing necessary for the approaching action* had been prepared.

Πάντα ἐνδέχεται καὶ ἄλλως ἔχειν· Not absolutely, *All things* are contingent; but, *All the results of contingent premises* are contingent.

Ἔχει δ' ἅπαντα ὀρθῶς· *All the sentiments just advanced* are correct.

Then shall every man have praise of God.

Πρὸς εἰδότας πάντα λελέξεται.

Propositions universal in form have often only a *figurative* universality, as denoting that which may be said to be (in the colloquial, not in the logical use of the word) *generally* true: as,

Ἃ πάντες ἴσασι· *What the majority of men, or of those who have had the opportunity of knowing, are acquainted with.*

All men mused in their hearts concerning John, whether he were the Christ or not.

An *absolute* universality may be put to the test by the denial of the opposite; or by the enumeration of parts: as,

All have sinned, is *absolutely* universal: since the opposite is denied; *There is none righteous:* and the parts are enumerated; *All Jews, and all Gentiles, have sinned.*

All things were made by the divine Word, is *absolutely* universal: for the opposite is denied; *Without Him was not any thing made that was made*: and the parts are specified; *By Him were all things created that are in heaven and that are in earth, visible and invisible.*

2. *Particular Propositions* have the subject *limited* to a part of its entire extent; thus, *some diseases are incurable;* where *incurableness* is attached not to all, but only to a certain portion of *diseases.*

Some men of deep erudition confine their knowledge to their own breasts.

Not every one who professes affection is a real friend.

Some friendships do not rest on a solid basis.

Several useful opportunities have been neglected.

Many have raised fortunes at the hazard of their lives.

Most arbitrary monarchs are revengeful.

Few men in this period of universal knowledge attain to literary eminence.

Almost all the poets have been unfortunate.

Very many stars have doubtless not yet been discovered by the best instruments.

There are scarcely any who are not under the influence of some prejudices.

3. *Singular Propositions* are characterized by a subject which signifies a *singular* or *individual* thing; as,

London is the glory of our country.

Noah's ark contained animals of every species.

The House of Commons represents the whole commonalty of the realm.

The King, Lords, and Commons, form a British Parliament.

His Majesty went to the House of Lords.
I am anxious to do good to my neighbours.
This question has too long engaged our attention.

Since words employed in an *abstract* or in a *collective* sense are singular; (see page 23;) therefore the propositions of which such words form the subject are *singular:* as,

Indifference to character betrays an unsound state of mind.
Chronology is the handmaid of history.
Virtue is her own reward.
Pride was not made for man.
Life is a vapour.
Happiness is not dependent on wealth.
Platina is the heaviest of known bodies.
Two and two makes four.
The chief instrument of human communion is speech.
Petty operations incessantly continued in time surmount the greatest difficulties.

In the last example the subject denotes *the aggregate of successive operations.* So the expression, *two and two,* signifies *the amount of two and two.*

The syncategorem *all* is the sign of an *universal* proposition, only when it is employed *distributively,* and may be interchanged with *every* or *each.* But when the syncategorem *all* is applied *collectively,* (so that the sense admits the introduction of the word *together,*) the proposition is *singular.*

All the Colleges are governed by their respective statutes; that is, *each of the Colleges is so governed.*

All the Colleges constitute an University; that is, *all together, collectively taken.*

All the allied troops fought courageously. (Univ.)

All the allied troops formed a noble army. (Sing.)

All the known primary planets revolve in elliptic orbits about our sun as their centre. (Univ.)

All the known primary planets are eleven. (Sing.)

Ἐγένοντο αἱ πᾶσαι ἑκατόν.
Ὑμεῖς οἱ πάντες οὐκ ἔσεσθε κύριοι.

Those forms also of *particular* propositions which have a specific limitation, (as, *many, not many, few, almost all,* &c.) have practically the character of *singulars;* as, *Most nations are too easily excited to war:* that is, *The majority of nations.*

4. *Indefinite Propositions,* having for their subject a common term without any sign either of universality or of limitation, are ambiguous as to their extent. They convey no intimation whether the subject denotes *all* or *a part only* of the individual things to which the word is applicable: as,

A man improves more by reading the story of a person eminent for prudence and virtue, than by the finest rules of morality.

Tragical representations of human woe make a deep impression on the heart.

The virtues confer a superior grace on their possessors.

The productions of a great genius, with many lapses and inadvertencies, are infinitely preferable to the more exact and correct works of an inferior author.

Errors are marks of infirmity.

Errors creep into the most prudent undertakings.

Such propositions are ambiguous, and it is the office of common sense, guided by an acquaintance with the branch of science to which the proposition relates, or the connexion in which it occurs, to decide upon the extent in which the subject is to be taken. One of the qualities, for instance, which is above predicated of *errors,* namely, that they are *marks of infirmity,* belongs to the subject *universally;* for *all errors* are such. The other predicate, however, *creep in to the most prudent undertakings,* can only be said of *some errors.* This is therefore a particular proposition, the former is universal.

Indefinite propositions may be distinguished from *singular* propositions by the following characteristic. Every *indefinite* proposition will admit of some sign, either universal or particular: but a *singular* proposition will not receive either. The following are therefore not indefinite but singular:

The English are the sovereigns of the ocean.

The heavenly bodies form one harmonious system.

It cannot be correctly said, *Every Englishman is*, or *Some Englishmen are the sovereigns of the ocean; Each of the heavenly bodies*, or *Some heavenly bodies form one system*. The subjects are collective, and therefore denote *individual* things or notions.

Although abstract subjects constitute singular propositions, as has been already stated, yet they may sometimes be considered as implying a distribution, and in this case the propositions in which they occur will be indefinite. Thus, in the sentence, *Pride was not made for man*, the subject may be taken *distributively* for each *kind* or *sensation* of pride; *No pride* (that is, *no species*, or *no feeling of pride*) *was made for man*. Sometimes a particle occurs in the course of a proposition, which fixes the extent of the subject; thus the sentence, *Emulation has sometimes a good, and sometimes a bad, tendency*, may be inaccurately used to signify, *Some kinds of emulation are of good tendency; and some kinds of a bad tendency*.

The combination of the universal sign with the negative particle renders a proposition indefinite, or ambiguous as to its extent; since that form is employed sometimes in an *universal*, and sometimes in a *particular* sense. In the following sentences it denotes universality:

Non omnia possumus omnes.

Πᾶς γὰρ ἀνὴρ πενίῃ δεδμημένος οὔτέ τι εἰπεῖν
Οὔθ' ἕρξαι δύναται. (*Theogn.* Γνωμ. 173.)

Ἐξ ἔργων νόμου οὐ δικαιωθήσεται πᾶσα σάρξ.
Πᾶς ἀνθρωποκτόνος οὐκ ἔχει ζωὴν αἰώνιον.
Πᾶσα προφητεία γραφῆς ἰδίας ἐπιλύσεως οὐ γίνεται.
All they that put their trust in him shall not be destitute: where the translation in our Bible is, *None of them that trust in him shall be desolate.*

In the following examples the same combination is applied in a limited or *particular* signification;

All men have not faith.
All is not gold that glitters.
Οὐ πάντα τὰ κακὰ φοβεῖται.
Non omne mare est generosæ fertile testæ.
Ὅσων μὲν οὖν ἐφίενταί τινες οὐ πάντα ἀγαθά ἐστι.
Οὐ πάντες χωροῦσι τὸν λόγον τοῦτον.
Πάντες μὲν οὐ κοιμηθησόμεθα.
Neque enim singulare est quicquid unum dici potest.

The natural order would be, *not all men have faith; not every thing which glitters is gold; not every thing which can be called one is singular.* And these forms are equivalent to, *some men have not faith; some things which glitter are not gold; some things which may be called one are not singular.*

Hanc doctrinam Scholastici hujusmodi carmine sunt complexi;

Quæ? Ca. vel *Hyp. Qualis? Ne.* vel *Aff.*
Quanta? Uni. Par. In. Sing.

This compression of the substance of the section into a harsh verse is intended to aid the memory. The division derived from the accidental quality is not introduced, because it is not strictly logical.

§. 3. *De Terminorum Distributione.*

PROPOSITIO Singularis in Syllogismo æque potest Universali. Nam subjectum ejus supponit pro *omni* suo significato. *Socrates est homo*, Universalis est, quia omnis ille Socrates tantum unus est. Indefinitæ quantitas judicatur ex *materiâ* propositionis, sive *habitudine connexionis extremorum*, quæ triplex est; 1. *Necessaria*, quando extrema *essentialiter* conveniunt; 2. *Contingens*, quando *accidentaliter* tantum; 3. *Impossibilis*, quando *essentialiter* differunt. Unde Propositio Indefinita pro Universali habetur, in materiâ impossibili et necessariâ; pro Particulari vero, in contingenti.

The fourfold division of Propositions into universal, particular, singular, and indefinite, may be conveniently simplified. So far as relates to their use in argument, *singular* propositions have the same characteristic as *universals;* namely, the subject is not limited by any adjunct or sign: it does not signify a portion out of a larger number, but extends to every individual thing which the word signifies. Thus, in *Senatus decrevit; One night elapsed; The king is returned; Erupit Catalina;* the subjects include every thing which the words themselves can include; and therefore they may (by a catachresis) be said to be *distributed.*

Indefinite propositions are also, as has been already stated, equivalent either to universals or to particulars, according to their signification, or to the mutual relation and bearing of the subject and predi-

cate, which is termed the *matter* of the proposition; and which must be either *necessary, impossible,* or *contingent.*

1. When the predicate denotes a quality *necessarily* attached to the subject, the proposition is in signification *universal,* and wants only the *sign* to render it formally so. Of this nature are the following:

Human plans, however well laid, are liable to disappointment; that is, All *human plans.*

Exaggerated commendations defeat their own purpose by exciting suspicion; that is, All *exaggerated commendations.*

2. If the predicate denote a quality wholly incompatible with the subject, and the extremes thus *essentially differ,* in this case also the proposition will be equivalent to an *universal:* thus,

The most prudent of human plans are not sufficient to ensure success; that is, No *human plans, even the most prudent, are sufficient,* &c.

Old soldiers do not willingly venture beyond the verge of experience; that is, No *old soldiers venture,* &c.

Brutes neither eat nor drink more than nature requires; that is, No *brutes,* &c.

3. But if the proposition, whether affirmative or negative, be such that the predicate may be asserted of some things comprehended in the subject, and denied of others; that is, if its extremes only *accidentally* agree or differ; it is in sense a *particular* proposition. Thus,

Victories have been gained under every circumstance of disadvantage; that is, Some *victories.*

While brutes neither eat nor drink more than nature requires, men degrade themselves by excess even below the level of the brutes; that is, Some *men degrade themselves.*

Quare, Quantitas Propositionis, quatenus ad Syllogismum facit, est duplex: *Universalis* et *Particularis*. Et nota, quod Universalis affirmans symbolum habet A; negans E: Particularis affirmans symbolum I; negans O.

Asserit A; negat E: Universaliter ambæ.
Asserit I; negat O: sed Particulariter ambo.

In Universali, signum affirmans distribuit tantum *Subjectum*: Negans, etiam *Prædicatum*. Nam ut verum sit *Omne a est b*, sufficit aliquod *b* convenire omni *a*: sed falsum est *nullum a esse b*, si vel aliquod *b* conveniat alicui *a*. Eodem argumento, ut sit verum *Aliquod a est b*, sufficit si vel aliquod *b* conveniat alicui *a*: sed falsum est quod *aliquod a non est b*, nisi illud *a* differat a quovis *b*. Et proinde in Particulari, nullus terminus distribuitur, præter *negantis prædicatum*, quod semper distribuitur.

The principles of the distribution of the terms in propositions are the following; subject only to the modification as to affirmatives described in the subsequent paragraph.

Universal affirmative propositions distribute the subject only:

Universal negatives distribute both the subject and predicate:

Particular affirmatives distribute neither the subject nor the predicate:

Particular negatives distribute the predicate alone.

The following scale therefore represents the extent of the extremes in each kind of propositions.

A.	Distrib.	×
E.	Distrib.	Distrib.
I.	×	×
O.	×	Distrib.

In the following examples the distributed or universal terms are distinguished by the change of type.

A.

ALL VIRTUES are habits.
Vain are ALL SUDDEN SALLIES OF DELIGHT.
OUR AFFECTIONS are liable to seduction.
THE PATIENT POOR deserve esteem.
Scribendi recte SAPERE fons est et principium.

The *subject* of the *universal affirmative* proposition is taken universally or distributively, and thus extends to every individual comprised under it. This is either formally expressed by the universal sign or syncategorem, or is to be inferred from the matter of the proposition. But the *predicates* do not necessarily denote *all* the individuals comprised under the common term, but most frequently signify only *some* of them. For instance; *All virtues are* SOME *habits:* there being other habits which are not virtues. *The patient poor are* SOME *of those who deserve esteem,* while others also may have the same quality predicated of them. *All sudden sallies of delight* are SOME *of,* but are far from *all,* the things to which belongs the character *vain.* These predicates therefore are not distributed. In such sentences there is a grammatical ellipsis of the word *some;* which the idiom of the French language introduces when the predicate is expressed in the sub-

All men think all men mortal but themselves.

No human foresight can check the advance of old age, infirmities, and death.

None but wise men are exempt from prejudice.

Wise men alone are exempt from prejudice.

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Those forms also of *particular* propositions which have a specific limitation, (as, *many, not many, few, almost all,* &c.) have practically the character of *singulars;* as, *Most nations are too easily excited to war:* that is, *The majority of nations.*

4. *Indefinite Propositions,* having for their subject a common term without any sign either of universality or of limitation, are ambiguous as to their extent. They convey no intimation whether the subject denotes *all* or *a part only* of the individual things to which the word is applicable: as,

A man improves more by reading the story of a person eminent for prudence and virtue, than by the finest rules of morality.

Tragical representations of human woe make a deep impression on the heart.

The virtues confer a superior grace on their possessors.

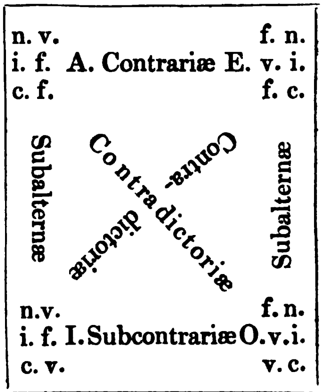
The productions of a great genius, with many lapses and inadvertencies, are infinitely preferable to the more exact and correct works of an inferior author.

Errors are marks of infirmity.

Errors creep into the most prudent undertakings.

Such propositions are ambiguous, and it is the office of common sense, guided by an acquaintance with the branch of science to which the proposition relates, or the connexion in which it occurs, to decide upon the extent in which the subject is to be taken. One of the qualities, for instance, which is above predicated of *errors,* namely, that they are *marks of infirmity,* belongs to the subject *universally;* for *all errors* are such. The other predicate, however, *creep in to the most prudent undertakings,* can only be said of *some errors.* This is therefore a particular proposition, the former is universal.

Oppositionis doctrina tota colligitur et demonstratur ex apposito Schemate, in quo, A. E. I. O. sunt quatuor Propositiones quantitate suâ et qualitate signatæ: quæ sunt *v. f.* (hoc est, *veræ* vel *falsæ*) pro materiâ *n. i. c.* (hoc est, *necessariâ*, *impossibili*, *contingente*;) quod ex ipsâ materiæ definitione satis patet.



De *necessariâ;* quia Propositionis extrema in eâ essentialiter conveniunt : de *impossibili ;* quia in eâ essentialiter differunt : de *contingenti;* quia secus non esset materia contingens. Inspecto igitur hoc Schemate facile est,

1. Oppositionis *species* numerare ; quæ sunt vulgo quatuor: *Contradictoria, Contraria, Subcontraria, Subalterna.*

2. Singularum definitiones conficere. V. g. *Oppositio Contradictoria, est inter* (A. O. vel E. I. hoc est) *duas Categoricas quantitate pariter et qualitate pugnantes. Contraria inter* (A. E. h. e.) *duas universales qualitate pugnantes* &c.

3. Oppositarum Canones quatuor eruere.

1. Contradictoriæ A. O. vel E. I. sunt in nullâ materiâ simul veræ; in nullâ simul falsæ; sed in quâcunque una vera, falsa altera.

Sed notandum est, ad Contradictionem requiri quatuor: nempe loqui de eodem, 1. *eodem modo; 2. secundum idem; 3. ad idem; 4. in eodem tempore;* quarum conditionum si defuerit aliqua, possunt *Est* et *Non est* inter se bene convenire. E. g. 1. Cadaver hominis *est* et *non est* homo: *Est* enim homo mortuus: *Non est* homo vivus. 2. Zoilus *est* et *non est* niger: *Est* enim crine ruber, niger ore. 3. Socrates *est* et *non est* comatus: nempe *est*, ad Scipionem, *non est* ad Xenophontem comparatus. 4. Nestor *est* et *non est* senex: *Est* enim, si de tertiâ ejus ætate, *non est*, si de primâ loqueris.

2. Contrariæ A. E. in nullâ simul veræ; in Contingenti, simul falsæ; in ceteris, una vera, falsa altera; nempe in Necessariâ, vera A, falsa E; in Impossibili, vera E, falsa A.

3. Subcontrariæ I. O. in Contingenti, simul veræ; in nullâ simul falsæ; in Necessariâ, vera I, falsa O; in Impossibili, vera O, falsa I.

4. Subalternæ A. I. vel E. O. et simul veræ, et simul falsæ, et una vera, falsa altera, esse possunt. Si universalis vera sit, particularis,

quæ sub eâ continetur, vera est. Et si particularis falsa sit, universalis, quæ eam continet, falsa est: Quoniam enim subjectum in universali distribuitur, fit, ut in eâ, et in particulari, idem, de eodem, secundum idem, dicatur: vere igitur et falso simul dici, (hoc est, affirmari simul et negari) nequit. Quare in Necessariâ, simul veræ sunt A. I; in Impossibili, simul veræ E. O; in eâdem, simul falsæ A. I; et in Necessariâ, simul falsæ E. O; in Contingenti, (propter A. E. falsas, I. O. veras) A. I. vel E. O. sunt una vera, falsa altera.

Opposition of propositions consists in the difference between any two categorical propositions which are composed of the same terms, but vary from each other in *quantity* only, (namely, when one is universal and the other particular,) or in *essential quality* only, (when one is affirmative and the other negative,) or in both *quantity* and *quality*.

The *accidental quality* of propositions, that is, their *truth or falsehood*, does not depend on their *opposition* or on any other mutual relation, but solely on their matter or actual signification.

If an attribute or predicate is *universally* connected with any subject; the *assertion* of that connexion, either universally or partially, must be true; and the *denial* of it, either universally or partially, must be false. In other words, in *necessary* matter, A and I are true; E and O are false. Thus, *All plants are organized bodies, Some plants are organized bodies*, are true propositions: *No*

plants are organized, Some plants are not organized, are false.

But if two terms are so related to each other, that the quality or notion expressed by the predicate cannot enter into the subject; to *assert*, either universally or partially, that it does belong to that subject is false; whereas, to *deny* it of the subject, whether universally or partially, is true. That is, in *impossible* matter, A and I must be false; E and O must be true. Thus it is false that, *All granite is a malleable substance*, and that, *Some granite is malleable:* but it is true that, *No granite is malleable*, and that, *Some granite is not malleable.*

Again, if any attribute or quality exists in one portion of the individuals denoted by the subject and not in others, it is false either to assert or to deny that predicate concerning the subject *universally;* but to assert or deny it *partially* will be true. That is, in *contingent* matter, *universal* propositions (A and E) are false; *particular* propositions (I and O) are true. For instance, it is false that *All birds are rapacious;* but true that *Some birds are rapacious.* It is false also that *No birds are rapacious*, but true that *Some birds are not rapacious.*

The application of these principles will illustrate the rules or canons of the several kinds of opposition.

1. *Contradictory Opposition* is that which subsists between two pure categorical propositions, differing both in *quantity* and *quality*. If therefore the one is universal affirmative, the other must be particular negative: or if the one is universal negative, the other must be particular affirmative; and *vice versâ:* as, *All men are responsible; Some men are not responsible. No soldiers are cowards; Some soldiers are cowards.*

The opposition between *Contradictory* propositions is perfect; since they differ in every respect.

Consequently they cannot be both true, or both false together.

For it is impossible that a proposition should be at the same time and in the same sense true and not true. If therefore it be true that *All vicious indulgences lay the foundation of future remorse,* the same assertion cannot be untrue; it cannot be said, *Not all vicious iudulgences lay the foundation of future remorse,* that is, *Some vicious indulgences do not lay the foundation,* &c. If it be true, *No virtues are ultimately injurious to men,* the assertion that *Not-no virtues, (non-nullæ virtutes,)* that is, *some virtues, are ultimately injurious,* must be false. On the other hand; if it be false that *Nemo mortalium est philosophus,* it cannot be false, that is, it must be true, that *Non-nemo mortalium est philosophus, Some men are philosophers.* Thus contradictories cannot be either true or false together.

The four requisites to a complete contradiction; (that the opposing propositions must speak of the same thing, in the same *manner,* in relation to the same *object,* in *comparison* with the same, and at the same *time;*) may be comprised in one rule, which is equally applicable to all the species of opposition; namely, *The terms must be employed in the same sense in both the opposing propositions.*

2. *Contrary Opposition* is between two *universal* propositions, differing in *quality;* as, *All trees possess vegetable life; No trees possess vegetable life.*

Contrary propositions cannot be both *true* together; but may be either both *false,* or the one *false* and the other *true.*

If, for example, it is true that *All works of art are the results of human skill,* (this quality being *necessarily* and therefore universally attached to the subject,) the contrary proposition, *No works of art are the results of human skill,* must violate truth. If on the other hand the matter is impossible, and

the quality of the predicate is never connected with the subject; it will be false to assert that connection, and true to deny it. Thus it is false that *All men are infallible;* but true that *No man is infallible.* But if the matter is *contingent,* it must be equally incorrect to make an universal assertion either affirmatively or negatively. Therefore, *All the fixed stars are discernible by the naked eye,* and, *None of the fixed stars are discernible by the naked eye,* are both false.

Singular propositions cannot, in strictness of speech, be *contradicted;* for their quantity cannot be changed. But the *contrary* to a singular proposition affords as perfect an opposition as the contradiction between universals and particulars. For, the matter of a singular proposition cannot be contingent; and in necessary and impossible matter contraries cannot be either both true or both false together.

Thus in the following propositions, the opposition is in form *contrary,* but in sense equivalent to a *contradiction.*

Friendship is a mere name:
Friendship is not a mere name.
Cesar was justly assassinated:
Cesar was not justly assassinated.

3. *Subcontrary Opposition* subsists between two *particular* propositions, differing in *quality;* as, *Some minds are clouded by prejudice. Some minds are not clouded by prejudice.*

Subcontrary propositions cannot be both *false;* nor can they be both *true* except in *contingent* matter. The very definition of contingent matter requires that it should be such as to allow the predicate to be at the same time asserted of some things comprised under the subject, and denied of others.

Thus it is equally true that *Some planets are attended with satellites*, and that *Some planets are not attended with satellites.* But if it is asserted, in necessary matter, that *Some diamonds consist of condensed carbon;* (which may be affirmed of all diamonds;) or, in impossible matter, that *Some philosophers are not free from error*, (which is likewise predicable of all;) these propositions are *true*, but their respective subcontraries are *false;* namely, *Some diamonds do not consist of condensed carbon; Some philosophers are free from error.*

4. *Subaltern Opposition* takes place between any two propositions which differ in *quantity* only; as, *All human laws are imperfect; Some human laws are imperfect. No men have an affectionate disposition; Some men have not an affectionate disposition.*

Subaltern propositions may be *both true*, or *both false;* or the universal may be *false*, and the particular *true.* The universal proposition is called *subalternans;* the particular, *subalternate.* The relation between them is scarcely to be called *opposition* in the common acceptation of the word, though it comes within the range of the definition which has here been given of that term.

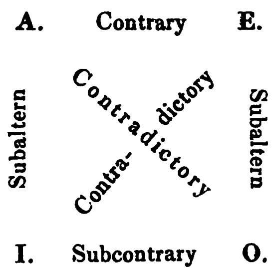
If an universal proposition is true, the particular which is comprehended under it is also true. For the universal includes the particular. If *all men are mortal*, it follows that any *some* men, that is, any particular class or number of men, are mortal. To deny therefore that *some men are mortal*, would be to assert the former proposition to be at the same time true and not true.

If the particular is false, the universal which comprehends it must be false likewise. If it is false that *some planets are motionless*, it must continue false when involved in the universal, *all planets are motionless.* Consequently, that universal must be also false.

But if an universal is false, or a particular true, the proposition subalternately opposed to it may be either true or false. For instance: the universal propositions, *All histories are written on philosophical principles, No minstrels were musicians,* are false: but the subalternate of the latter is also false; while the subalternate of the former is true. Again: it is true both that *some herbs are poisonous,* and that *some mountains are elevated:* but the universal which comprehends the former is false; that which contains the latter is true.

Accuracy of language and of argument is much facilitated by an acquaintance with the principles of *opposition of propositions.* The two following tables present a summary of the rules which have been laid down on the subject.

N. v.	*All fowls are birds.*	N. f.	*No fowls are birds.*
I. f.	*All fowls are dogs.*	I. v.	*No fowls are dogs.*
C. f.	*All fowls are hens.*	C. f.	*No fowls are hens.*



N. v.	*Some fowls are birds.*	N. f	*Some fowls are not birds.*
I. f.	*Some fowls are dogs.*	I. v.	*Some fowls are not dogs.*
C. v.	*Some fowls are hens.*	C. v.	*Some fowls are not hens.*

OPPOSITION.					
Contradictory,	Between A. & O.		A.	O.
		N.	true	false.
		I.	false	true.
		C.	false	true.
	Between E. & I.		E.	I.
		N.	false	true.
		I.	true	false.
		C.	false	true.
Contrary,	Between A. & E.		A.	E.
		N.	true	false.
		I.	false	true.
		C.	false	false.
Subcontrary,	Between I. & O.		I.	O.
		N.	true	false.
		I.	false	true.
		C.	true	true.
Subaltern,	Between A. & I.		A.	I.
		N.	true	true.
		I.	false	false.
		C.	false	true.
	Between E. & O.		E.	O.
		N.	false	false.
		I.	true	true.
		C.	false	true.

§. 5. *De Conversione Propositionum.*

CONVERTI dicitur Propositio, cujus extrema transponuntur. Variis id modis fieri potest, sed præsertim tribus: 1. *Simpliciter*, quando tam quantitas, quam utraque qualitas servatur.

2. *Per accidens*, quando servatâ qualitate, quantitas propositionis mutatur. 3. *Per Negationem*, quando, *transpositis* terminis, *non infinitans* subjecto affigitur et *qualitas* expositæ propositionis *quoad vocem* mutatur.

1. E. I. converti possunt Simpliciter. 2. A. E. per Accidens. 3. A. O. per Negationem. Conversio in omnibus illativa est; i. e. veritas Conversæ Propositionis sequitur ex veritate Expositæ.

Nam 1°. Cum in E uterque terminus, in I vero neuter distribuatur, Conversa post transpositionem æquipollet Expositæ. Sit vera E, *neminem stultum esse beatum:* ergo vicissim; *neminem beatum esse stultum.* Sit vera I, *aliquos divites esse infelices:* ergo vicissim; *aliquos infelices esse divites.*

2°. Sit vera E: Ergo et ejus simpliciter conversa: Ergo et conversæ subalternata: quæ est expositæ conversa per accidens. Sit vera A: Ergo et ejus subalternata: Ergo et subalternatæ simpliciter conversa: quæ est expositæ per Accidens.

3°. Quoniam *negare* qualitatem Subjecto *deesse*, vel *inesse affirmare* idem valet, si *vera* est A, *Omnis sapiens est beatus*, vera etiam, *nullus sapiens est qui non beatus;* hæc est E, quæ Simpliciter converti potest: qui *non*-beatus

est *non est* sapiens: quæ est Expositæ Conversa per Negationem. Si vera O, puta, *aliqui boni non sunt docti*, tum, si prædicato affigas negationem copulæ, æquipollentem in I propositionem habebis; *aliqui boni sunt non-docti* sive *indocti:* quæ simpliciter converti potest: *aliqui non-docti sunt boni:* quæ est Expositæ Conversa per negationem.

Conversion of propositions consists in the transposition of the subject and predicate; as, *Metals are not earths; Earths are not metals.* When no other change takes place, the process is called *simple conversion.* But if the quantity of the proposition is altered, the process is said to be an *accidental or subordinate conversion:* as, *All earthy substances are minerals; Some minerals are earthy substances.* And if the quality of the proposition is changed while the quantity is retained, the conversion is said to be *by negation* or *contraposition;* as, *Some poems are not metrical compositions; Some compositions not metrical are poems.*

Universal negative, and Particular affirmative propositions, may be *simply* converted. All Universals, whether affirmative or negative, may be converted *per accidens.* Universal affirmatives and Particular negatives are subject to *negative* or *contrapository* conversion.

A is converted	per accidens	to I.
	by negation	to E.
E is converted	simply	to E.
	per accidens	to O.
I is converted simply		to I.
O is converted by negation		to I.

1. *Simple conversion* requires that the extremes of the proposition should be of equal extent; that is,

either *both* distributed, as in E; or *neither* distributed, as in I. For in these cases the mere transposition of the extremes, without any alteration of the sign, does not derange the quantity of the proposition. And for this reason, its accidental quality (its truth or falsehood) continues the same: that is, if any proposition is true, its simple-converse must be also true: if false, its simple-converse must be false. So that, although simple conversion does not partake of the nature of an argument, yet because it educes a proposition which is necessarily involved in the original sentence, it authorizes the inference of the one from the other. And this inference is reciprocal: for if either of the two propositions be laid down, the other may be inferred from it.

Since, therefore, the universal negative proposition, *No ruminating animals are carnivorous*, is true, it is also true that, *No carnivorous animals are ruminating animals*. For, both extremes being distributed, the sentence, *No ruminating animals are carnivorous*, declares that *every carnivorous animal* differs from *every ruminating animal*. Therefore reciprocally, *every ruminating animal* differs from *every carnivorous animal*: that is, *No carnivorous animal is a ruminating animal;* or as it may be more concisely expressed, *No carnivorous animals ruminate*.

On the same principle, since it is false that *No kites are birds of prey*, it is false that *every kite* differs *from every bird of prey*. It is therefore false that *every bird of prey* differs from *every kite;* that is, that *no birds of prey are kites*.

The following are instances of the conversion of true universal negative propositions:

No true philosophers omit the enforcement of moral duty:

None who omit the enforcement of moral duty are true philosophers.

Nothing morally wrong is politically right:
Nothing politically right is morally wrong.

Real piety does not promote melancholy:
Whatever promotes melancholy is not real piety.

Again, the particular affirmative propositions, *Some proud men occasionally stoop to acts of the basest servility, Some poor persons are liberal,* may also be simply converted; for, the ellipsis of the sign being supplied, the sentences are, *Some proud men are* some *men who occasionally stoop,* &c. *Some poor persons are* some *liberal persons.* In the transposition therefore, both extremes retain their original quantity, and the truth of the proposition is also preserved: *Some who occasionally stoop to acts of the basest servility are proud men: Some liberal persons are poor.* So also, since it is false that *Some diamonds are Scotch-pebbles,* its converse, *Some Scotch-pebbles are diamonds,* is likewise false.

The following are examples of the conversion of particular affirmative propositions.

Some full-grown persons display all the folly and thoughtlessness which characterize youth:

Some who display all the folly and thoughtlessness which characterize youth are full-grown persons.

Some offences against the divine law are exempt from human cognizance:

Some practices exempt from human cognizance are offences against the divine law.

Some things imperceptible by the unassisted eye are productions of art:

Some productions of art are things imperceptible by the unassisted eye.

2. *Accidental* or *subordinate conversion* is not so perfect as the former, inasmuch as it requires a change from the universal to the particular.

Universal negative propositions are convertible not only *simply*, but also *accidentally*. For since the simple converse is true, the particular which is subalternate to that simple converse is also true; which (by the definition) is the accidental converse of the primary proposition. Thus, if it is true that, *No larks are web-footed birds*, it follows by simple conversion that, *No web-footed birds are larks;* whence it is necessarily true by the laws of opposition, that, *Some web-footed birds are not larks;* which is the converse *per accidens* of the original proposition.

Universal affirmative propositions may be converted *per accidens*. For when A is true, its subaltern is also true; which subaltern, being I, is simply convertible; and its simple converse will be the accidental converse of A. Thus it is true that, *Rich men are universally exposed to many snares;* it is therefore true that, *Some rich men are exposed to many snares;* of which the converse is also true, *Some who are exposed to many snares are rich men.* But this is the accidental converse of the original proposition.

The same may be illustrated by the following examples:

Every act of fortitude is an act of virtue:
Some acts of virtue are acts of fortitude.

All the various ranks in society tend to the common good:
Some things which tend to the common good are the various ranks in society.

All tigers are carnivorous:
Some carnivorous animals are tigers.

An universal affirmative proposition may be *simply* converted when its predicate is distributed: as, Ἡ εὐδαιμονία ἐστὶ τὸ ἄριστον· Ἡ ἀρετή ἐστιν ἡ ἠθικὴ μεσότης· Ὁ μεγαλόψυχός ἐστιν ὁ μεγάλων αὐτὸν ἀξιῶν, ἄξιος ὤν. *Ei*

quod decet, honestum est, et quod honestum est, decet. In these and similar sentences the subject and the predicate are co-extensive, and therefore reciprocal. Thus also if it is true that *Cicero was the discoverer of Cataline's conspiracy*, it is equally true that *the discoverer of Cataline's conspiracy was Cicero.*

But when this is not the case, an universal affirmative proposition cannot be simply converted; as,

Admitting that the meeting was an illegal meeting, it does not necessarily result that it was a riotous one; for although a riotous meeting is therefore an illegal one, yet it is not thence to be inferred, as a matter of course, that if illegal, it must be riotous.

Aliud est jus civile, aliud jus gentium. Quod civile, non idem continuo gentium; quod autem gentium, idem civile esse debet.

The *inference* in the case of accidental conversion is not so complete as in simple conversion; for the accidental converse does not *necessarily* retain the accidental quality of the leading proposition, when the latter is false. If a proposition be true, its converse, whether simple or accidental, must be true: but on the contrary, if a proposition be false, although its simple converse must be false, yet its accidental converse may be either true or false: so that the conversion cannot be reciprocal. For conversion *per accidens* depends on the laws of subaltern opposition; in which the particular does not necessarily retain the accidental quality of the universal, except when that universal is true.

Hence it cannot be inferred from the falsehood of the propositions, *No Hottentots possess reason*, *All who are promoting the good of their fellow creatures are wealthy men*, that the accidental converse of each is false; namely, *Some who possess reason are not Hottentots; Some wealthy men are promoting the good of their fellow creatures:* these propositions being in fact true.

Particular negative propositions are not convertible either simply or per accidens. For since the subject is not distributed, the converse would require the predicate to be undistributed: which is impossible in negative propositions.

3. The third species of conversion is called *conversion by negation*, or *by contraposition*. It is effected by *transposing the extremes*, and combining with each of them the *particula infinitans, not*: or more simply, by *combining that negative particle with the new subject and changing the essential quality of the original proposition.* This method is applicable to universal affirmative and particular negative propositions. The inference of the converse from the primary proposition is perfect, and the conversion reciprocal; since the two propositions are necessarily true together, or false together.

1. For instance, the *universal affirmative* sentence, *All virtues are habits*, converted by negation or contraposition, becomes, *All not-habits are not-virtues*, or more simply, *No not-habits are virtues:* that is, as more familiarly expressed, *None but habits are virtues*, or, *Habits alone are virtues*, or, *Whatever is not a habit is not a virtue.* And this is implied in the former; for if the quality or attribute denoted by the term *habits* belongs to *all virtues*, it must follow that whatever does not possess that quality cannot belong to the class of virtues. And *vice versâ:* if nothing which is destitute of a certain quality belongs to a certain class, it follows that every individual of the class possesses the quality. Therefore reciprocally, if it is known to be true, that *Whatever is not a habit is not a virtue,* it must be inferred that, *All virtues are habits.*

Thus also:

All vertebrated animals have red blood, (that is, *All vertebrated-animals are red-blooded-animals,*) converted by negation becomes, *No not-red-blooded-*

animals are vertebrated-animals; or, *Whatever animals have not red blood are not vertebrated;* or, *None but redblooded animals are vertebrated.*

Every duty is accompanied with a certain propriety and decorum, implies the converse, *Whatever is not accompanied with a certain propriety and decorum is not a duty.*

All benevolent persons exercise self-denial for the benefit of their fellow-creatures, implies the converse,

Whoever does not exercise self-denial for the benefit of his fellow-creatures is not benevolent: or, *They only who exercise self-denial, &c. are benevolent.*

All objects of congratulation are objects of envy; the negative converse is,

Ὁ δ' ἀφθόνητός γ' οὐκ ἐπίζηλος πέλει. (*Æsch. Ag.* 612.)

That which surmounts the difficulties of literature and science is perseverance: by negation,

Nothing but perseverance can surmount the difficulties of literature and science.

They who could control the waywardness of an Athenian assembly were men of preeminent abilities: by negation or contraposition,

It required men of preeminent abilities to control the waywardness of an Athenian assembly, or, *None but men of preeminent abilities only*, &c.

Whosoever is of God doeth righteousness and loveth his brother: therefore, by contraposition;

Whosoever doeth not righteousness is not of God, neither he that loveth not his brother.

The statement also in the 12th chapter to the Hebrews (ver. 7, 8.) proceeds on the same principle.

It amounts to this; *All the children of God are partakers of chastisement: therefore,* by contraposition, *They who are not partakers of chastisement are not children of God.*

2. *Particular negative* propositions may also be converted by negation or contraposition. The sentence, *Some sentimental persons are not benevolent,* by affixing the *particula infinitans* to each of the transposed terms, assumes the harsh but correct form, *Some non-benevolent persons are-not non-sentimental.* Or by affixing the negative to the new subject only, and changing the quality of the proposition, the converse will be thus expressed, *Some non-benevolent persons are sentimental.*

The process of converting a *particular negative* proposition by *contraposition* may be simplified by transferring the negative particle from the copula to the predicate. The sentence is thus reduced to a particular affirmative form; the simple converse of which will be the converse by contraposition of the original proposition. Thus the proposition, *Some jewels are-not diamonds,* is equivalent to, *Some jewels are not-diamonds;* of which the simple converse is, *Some not-diamonds are jewels;* that is, *Some things which are not diamonds are jewels.* In the same manner, because,

Some fishes have no teeth, therefore,
Some animals without teeth are fishes.

Again: *Some who are candidates for the office of directing others are not competent to regulate their own tempers,* by contraposition becomes, *Some who are not competent to regulate their own tempers are candidates for the office of directing others.*

Some highly important duties cannot be accomplished without the exercise of selfdenial; therefore,

Some things which cannot be accomplished without the exercise of selfdenial are highly important duties.

Some men of great abilities are not agreeable in manners or disposition:

Some persons who are not agreeable in manners or disposition are men of great abilities.

This method of conversion is of extensive use, both for logical and rhetorical purposes. It is logically useful, in the analysis of arguments for the purpose of reducing them to form; and in the demonstration of the correctness of syllogisms. It is rhetorically useful, because the negative or contrapository converse frequently conveys a sentiment with more perspicuity and emphasis than the primary form. Thus, *All who deserve the fair are brave,* is weak in comparison with its equivalent sentence in the converted form, *None but the brave deserve the fair.* This observation applies most fully to the conversion of universal affirmative sentences, as is obvious from several of the examples above given.

CAP. III.

DE SYLLOGISMO CATEGORICO PURO.

§. 1. *Quid sit Syllogismus.*

TERTIA pars Logicæ agit de *Syllogismo*, quod est signum tertiæ operationis intellectûs: nempe *Ratiocinium* Propositionibus expressum.

Quare, cum Ratiocinium sit progressus mentis ab uno judicio ad aliud, perspicuum est in eo requiri, 1. Aliquid unde ratiocinium ordiatur; 2. Aliud quo perveniat; 3. Ea sic ab invicem pendere, ut unum ex alio, et alîus vi innotescat; secus enim, unum post aliud cognoscere, est tantum sæpe judicare.

Reasoning has been defined to be *the progress of the mind from one judgment to another*. This definition is necessarily figurative; since it is naturally impossible to assign in explanation of the notion signified by the word *reasoning* any other notions which are in themselves more simple. It may perhaps be more properly called an *illustration* than a *definition*. As in natural motion, there must be a place from which the moving body sets out, a place at which it arrives, and a connexion between the two by the presence of the body successively in each intermediate point: so in the act of reasoning, there must be certain principles from which it commences; a conclusion at which it arrives; and such a relation between the principles and the con-

clusion, that the mind possessed of the former shall be irresistibly carried on to the latter.

Thus when the mind is thoroughly convinced that, *Every science which elucidates history is of important use*; and that, *Chronology is a science which elucidates history*; it cannot refuse to acquiesce in the inference that, *Chronology is of important use.*

But when it is argued (as some have done) that *Because at the creation the sun was made to rule the day, and the moon and stars to rule the night; therefore the pope is superior to kings and emperors;* the mind cannot recognize any mutual relation: the sentence expresses no more than two or three unconnected judgments.

Jam, ex quo aliud cognoscendum est, ipsum certe præcognosci debet; et proinde quasi sine ratiocinio notum, *antecedere*, *poni*, *præmitti*; et ex eo reliquum *concludi*, *colligi*, *inferri* et *sequi* dicitur.

The principles on which arguments are founded must be known *previously* to the position which is to be proved. Hence an astronomer, having previously discovered that *on such a day the earth will directly intervene between the sun and the moon*, infers that *a lunar eclipse will then occur;* while another person, having first been assured on competent authority of the fact of the eclipse, or being a witness of it, infers from that fact the relative position of the heavenly bodies.

The principles thus supposed to be previously known are therefore said to be *laid down* or *premised;* and the new proposition at which the mind arrives by their means is, in familiar as well as

technical language, said to *follow*, to be *deduced*, *collected*, or *inferred* from them.

These principles are themselves derived either from impressions conveyed to the mind through the bodily senses, or from consciousness, or from testimony, or from inductive process, or from previous syllogistic argument:

For instance: 1. *The too frequent use of the telescope injures the eyes; The sensation produced by contact with fire is painful; Winter is cold;* are conclusions the first principles of which were impressions conveyed through the medium of the *senses*.

2. *I am the same person that I was ten years ago;* is an inference from a principle which is derived from *consciousness;* namely, *I retain the impressions of events which affected me at that time.*

3. The principles, *Philip and Alexander were unable to govern themselves; Philip and Alexander were celebrated conquerors;* (from which flows the conclusion, *some celebrated conquerors have been unable to govern themselves;*) are derived from the *testimony* of historians.

4. In the argument, *No papilionaceous plants are poisonous; but trefoil is a papilionaceous plant; therefore trefoil is not poisonous:* both the principles from which the conclusion is drawn have been previously ascertained by *induction;* that is, by an examination and comparison of so many individual instances as are deemed sufficient to authorize those universal laws or rules.

5. When it is argued, *Every measure which interferes with the stability of the British constitution is objectionable; The maintenance of a large standing army in time of peace is a measure which interferes with the stability of the British constitution; therefore the maintenance of a large standing army in time of peace is objectionable:* both the premised principles may be considered as already proved by

syllogistic argument from other premises; namely, the first from the principle that *every such measure violates the bill of rights;* the second from the principle that *a standing army destroys the equilibrium of the three estates of the realm.*

Those principles the knowledge of which is usually attributed to *intuition*, and which are therefore denominated *a priori* truths or *axioms*, are more correctly considered to be the result of spontaneous induction.

Est autem duplex *consequentia:*

1. *Materialis;* quando ex Antecedente Consequens infertur *solâ vi* Terminorum, quæ est *Argumenti materia;* ut, *Homo est animal:* Ergo *est vivens.*

2. *Formalis;* quando infertur propter ipsum colligendi modum, quæ est *argumenti forma;* ut, *B est A; C est B:* Ergo *C est A.* Mutatis terminis et servatâ eorum dispositione, Materialis plerumque fallit, Formalis semper obtinet: et proinde hæc solum in Logicâ spectatur, illa, tanquam mutabilis et lubrica, negligitur.

The word *Consequence* (*consequentia*) is most frequently employed, both in familiar and in scientific writings, in the same signification as the word *consequent* (*consequens*); namely, to denote that which follows or is deduced from some antecedent cause or principle. But it is more consistent with the analogy of language to apply it either to *the dependence of the consequent on its antecedent;* or to

the mode in which that dependence is shewn. In the latter of these two senses it is here employed.

1. *Material consequence,* denotes the dependence of the proposition inferred upon the principles premised, when that dependence is discoverable merely from the general sense of the passage, the argument not being expressed according to logical arrangement. In this manner arguments are most frequently advanced, unless any peculiarity in the subject, or other circumstances, require a more definite and perspicuous statement.

The following are instances of material consequence.

A good education is highly valuable; for it softens the manners and ameliorates the dispositions of the heart.

The earth has been repeatedly circumnavigated; we need therefore no other evidence to authorize us to explode the ancient doctrine that we live on an interminable plane.

It is gross idolatry to pay religious adoration to a created being; now that the sun is a creature none can deny; consequently the worshippers of the sun are idolaters.

2. *Formal consequence* is that mode of stating an argument which strictly accords with logical principles, and represents the actual process of the mind in arriving at the conclusion.

The arguments above given, when reduced to *form*, will be thus expressed:

Every thing which softens the manners and ameliorates the dispositions of the heart is highly valuable: But, a good education softens the manners and ameliorates the dispositions of the heart: Therefore, a good education is highly valuable.

No interminable plane is circumnavigable: The earth is circumnavigable: Therefore the earth is not an interminable plane.

Or thus: *Nothing which has been circumnavigated is an interminable plane: The earth has been circumnavigated: Therefore the earth is not an interminable plane.*

To worship a created being is idolatry: To worship the sun is to worship a created being: Therefore to worship the sun is idolatry.

Every *material* argument is reducible to a *formal* syllogism, by correcting the arrangement and by supplying that which is more usually left to the judgment of the hearer. The harshness and apparent tautology of the formal syllogism has, indeed, been an occasion of much prejudice against the syllogistic system. Such an objection is however as unreasonable as it would be to urge that grammar is futile, from the harshness which the writings of any author would present if all the grammatical ellipses were supplied. The man who should publish the Spectator with every grammatical ellipsis filled up, and he who should reduce Euclid's Elements to formal syllogisms, would alike display their own absurdity, but would not prove any futility, either in the science of grammar, or in the principles or practice of syllogistic argument.

It is not the province of Logic to ascertain the truth of the propositions in an argument, which must be the appropriate office of other sciences; but, supposing the principles true, to ascertain the inferences deducible from them. It effects this chiefly by guarding the mind against the fallacies which may arise from the language in which an argument is expressed. To this object the following rules are directed: and in the illustrations attached to them, the premises must be hypothetically considered as true.

Hisce intellectis, opinor satis constare quo

sensu definiatur *Syllogismus: Oratio, in quâ positis quibusdam atque concessis, necesse est aliud evenire præter et propter ea quæ posita sunt atque concessa.*

Syllogism is a species of *sentence;* and is distinguished from all the collateral species by the logical difference, which is described in the remainder of the definition. The antecedent contains principles which not only the person arguing lays down as true, but to which he supposes that those to whom the argument is addressed will yield assent. Those principles, if not assented to, require to be established by either syllogistic or other proof, according to their nature. The conclusion in a syllogism is so closely related to the principles premised as to be necessarily implied in them; yet it expresses a judgment totally distinct from them. To assert that *because no bad men are profitable companions, therefore no profitable companions are bad men,* is not to syllogize; for the conclusion is not distinct from the proposition whence it is deduced, but is entirely involved in it. The inference that *the company of bad men should be avoided, because it is pernicious,* is syllogistically drawn; for the conclusion, *the company of bad men should be avoided,* is both *præter* and *propter,* distinct from, and rendered necessary by, the previously known premises, *Whatever is pernicious should be avoided;* and, *The company of bad men is pernicious.*

§. 2. *Canones Syllogistici.*

MULTÆ sunt ejus species; sed una tantum præsentis instituti; nempe *Categoricus simplex,*

i. e. qui constat tribus propositionibus de inesse. E quibus duæ priores sunt Antecedens, tertia Consequens; quæ extra syllogismum spectata (scil. quamdiu hæret in incerto) *Problema*, et *Quæstio* dicitur; in syllogismo autem (nempe post fidem factam) *Conclusio.*

The classification of Propositions according to their substance has been described on pages 91—94. But since propositions are the instruments by which deductive reasoning is carried on, Syllogisms admit the same arrangement; namely, into (i.) Categorical Syllogisms; and these either (1.) Pure, or (2.) Modal: and (ii.) Hypothetical Syllogisms; which are either (1.) Conditional, or (2.) Disjunctive.

The Hypothetical Syllogisms will be treated of hereafter. The second class of Categorical Syllogisms, called Modal, are of little use, and are sufficiently explained by the observations already made concerning Modal Propositions; (pages 93, 94.) The subject of present consideration is the *Pure or Simple Categorical Syllogism;* so called because it is composed of three pure categorical propositions.

Of these propositions the first and second are considered as previously known and allowed. These therefore conjointly constitute the *Antecedent.* The third proposition is the result inferred, and is therefore called the *Consequent* or *Conclusion.*

This conclusion may present itself, unsought-for, to the mind, from the mere force of the antecedent. But it is more frequently a topic of enquiry previously set before the mind in an undecided form, to be affirmed or denied by the judgment according to the force of arguments to be discovered or advanced. The topic thus presented for reflection or discussion is sometimes called the *problem;* by mathematicians

the *theorem;* by logicians, as well as in common language, more frequently called the *question.*

Thus the *question* before a deliberative assembly might be whether *Universal compulsory education on an uniform plan is or is not a national benefit.* One may argue that *it increases the amount of useful knowledge in the country:* and his conclusion will accordingly be in the affirmative. Another may argue that *it is calculated to divert the attention and energies of youth from the pursuits appropriate to their station in life and the circumstances around them to subjects which may probably never prove useful to them:* and he will come to the negative conclusion. The arguments may be formally stated thus:

Question or Problem.	*Is uniform compulsory education a national benefit?*
Antecedent.	*Whatever augments useful knowledge is a national benefit;* *Uniform compulsory education augments useful knowledge:*
Consequent.	*Uniform compulsory education* is *a national benefit.*

Antecedent.	*Whatever withdraws youth from their appropriate duties is not a national benefit;* *Uniform compulsory education withdraws youth from their appropriate duties:*
Consequent.	*Uniform compulsory education* is not *a national benefit.*

Again, let the character of *Emulation* be the topic of enquiry:

Question or Problem.	*Is emulation a principle worthy of encouragement?*

Antecedent.	*Whatever promotes diligence is a principle worthy of encouragement;* *Emulation promotes diligence: Therefore,*
Consequent.	*Emulation is a principle worthy of encouragement.*
Antecedent.	*Whatever produces envy is not a principle worthy of encouragement;* *Emulation produces envy: Therefore,*
Consequent.	*Emulation is not a principle worthy of encouragement.*

Quæstionis duo sunt extrema, Subjectum et Prædicatum; quorum de Convenientiâ vel Dissidio inquiritur, ope termini alicujus tertii; idque propter Canones sequentes, in quibus vis omnis Syllogistica fundatur.

It has been observed (page 5.) that the terms *agreement* and *disagreement* are *figuratively* applied to the terms of a proposition. *Agreement* does not denote that the terms are absolutely equivalent to each other. It simply means that the predicate (metaphysically speaking) describes a quality which is attached to the subject; as, *Grass is green*, denotes that the attribute of *greenness* belongs to *grass*: or, (to describe the same thing logically,) that the predicate is a class or genus, which comprehends the subject as the whole or a subordinate portion of itself; as, *Grass is green*, asserts that the genus *green things* contains under it the species *grass*.

Terms are therefore said to *agree* with each other, when one of them can be affirmatively predicated of the other: they disagree, when the one cannot be predicated of the other. In estimating the agreement or disagreement, each term must be taken in conjunction with its appropriate sign; that is, in reference to its actual extent in the proposition.

Thus, *All mountains are conductors of electric fluid*, denotes that the term *all-mountains* agrees with the term *some-conductors-of-the-electric-fluid*, and that *some-conductors-of-the-electric-fluid* agrees with *all-mountains*. *Some minerals are inflammable substances*, expresses the mutual agreement between *some inflammable substances* and *some minerals*. *No metals can be decomposed*, signifies that *all metals* differ from *all decompoundable substances*, and *all decompoundable substances* from *all metals*. *Some specious theories have not been consistent with established facts*, intimates a mutual disagreement between *all systems consistent with established facts* and *a certain definite portion of specious theories*.

1. Quæ conveniunt in uno aliquo eodemque tertio, ea conveniunt inter se.

Terms which agree with some one and the same third term agree with each other.

Thus let *some birds* and *some swimming animals* be two distinct terms, and let each be compared with the third term *all swans*. Since the term, *some swimming animals* agrees with *all swans;* (that is, *swimming animals* is a class comprehending *all swans*, and consequently, *all swans are swimming animals;*) and *some birds* agrees also with *all swans*, (that is, *all swans are birds;*) it follows that the two terms agree with each other. In other words, because

All swans swim, and
All swans are birds; therefore
Some birds swim.

Again, let the question or problem be, *Humility is worthy of constant cultivation*. The predicate (*worthy of constant cultivation*) agrees with, or comprehends within the extent of its signification, a third term, (*An ornament of the Christian character*); but the subject (*humility*) agrees with the

same third term; therefore the extremes agree with each other. Hence the following argument is correct:

Every ornament of the Christian character is worthy of constant cultivation;

Humility is an ornament of the Christian character:

Therefore, Humility is worthy of constant cultivation.

2. Quorum unum convenit, alterum differt uni et eidem tertio, ea differunt inter se.

If one term agrees with and another differs from any one and the same third term, they differ from each other.

Thus since, of the two terms *Liverpool*, and *city*, the latter agrees with the third term, *the chief town in an episcopal see*, but the former disagrees with the same third term; they also disagree with each other. That is, because

Every city is the chief town of an episcopal see;

But, *Liverpool is not the chief town of an episcopal see;*

Therefore, *Liverpool is not a city.*

Again, if it is desired to prove that *A suspicious habit is not a quality appropriate to a man of sense.* The subject (*suspicious habit*) agrees with a third thing, (sc. *that which springs from a conscious want of dignity*): but the predicate (*a quality appropriate to a man of sense*) differs from that third. Therefore the extremes disagree with each other, and the argument is thus expressed; *Nothing which springs from a conscious want of dignity is a quality appropriate to a man of sense: But a suspicious habit springs from a conscious want of dignity: Therefore, a suspicious habit is not a quality appropriate to a man of sense.*

These two canons or axioms constitute the foundation on which the superstructure of syllogistic reasoning is reared. They bear an apparent analogy to the mathematical axioms, *Things which are equal to the same are equal to one another;* and, *Things of which one is equal and the other not equal to the same, are not equal to one another.* Yet the objects of the two sciences are so different, that to insist minutely on the supposed similitude between the mathematical and the logical axioms, would be calculated to mislead or at least to confuse the mind.

§. 3. *Syllogismi Regulæ generales.*

EX sex hisce principiis, Syllogismi structura sic deducitur.

1. In omni Syllogismo sunt tres, et tres tantum, termini. Nam Syllogismus omnis probat aliquam conclusionem: Et in illâ sunt duo tantum extrema: Et illa neque convenire, neque differre probatur, sine uno, unoque tantum, tertio.

Jam, Prædicatum Quæstionis dici solet *majus extremum, major terminus;* Subjectum Quæstionis, *minor;* Terminus vero tertius, cui quæstionis extrema comparantur, Aristoteli *Argumentum,* vulgo *Medium.* Nam prædicatum quæstionis plerumque *amplius* est medio; hoc minori.

1. That three terms are necessary, and no more than three are admissible, in a correct syllogism, is obvious from the axioms already laid down. For,

the conclusion to be proved contains two terms: the process of proof requires the comparison of each with a single additional term: nor is there any room for the admission of any more. Thus in the following syllogism the terms of the question are *utile*, and *honestum*; and the term of comparison is *bonum*.

> *Quod bonum est, id certe utile;*
> *Quod honestum, id bonum; Ergo,*
> *Quidquid honestum id utile.*

2. It is expedient that each of these terms should be distinguished by an appropriate name. The *predicate* therefore of the *question* or *conclusion* is denominated the *major term* or the *major extreme;* the *subject* of the *question* or *conclusion* is the *minor term* or *extreme;* and the term of comparison is called the *middle term* or *medium.* Thus in the syllogism above given,

The major extreme or term, namely, the predicate of the question, is *utile:*

The minor extreme or term, namely, the subject of the question, is *honestum:*

The medium, or third term, is *bonum.*

The distinguishing names, *Major, Minor,* and *Middle terms,* are derived from the comparative extent of each, in most syllogisms which have an universal affirmative conclusion. Thus, in the syllogism, *Whatever betrays*$^{\mu}$ *meanness is hateful*^{M}*; but flattery*^{m} *betrays*$^{\mu}$ *meanness: therefore flattery*^{m} *is hateful*^{M}*:* the major extreme (M), *hateful,* is more extensive in its application than the medium (μ), *whatever betrays meanness,* which is only one class of things *hateful:* and this medium is more extensive than the minor term (^{m}), *flattery,* which is but one class of *things betraying meanness.*

In the following apparent syllogism there are four terms: *True wisdom cannot be too dearly purchased; Humility always accompanies true wisdom:*

Therefore humility cannot be too dearly purchased. For the major term is, *a good which cannot be too dearly purchased:* and the minor term is, *humility:* but instead of a single middle term, one of these extremes is compared with, *true wisdom;* and the other with, *some quality which accompanies true wisdom;* which are distinct terms.

This rule is obviously violated when an argument contains an equivocal word employed in different significations. But it also extends to every occasion in which, through the imperfection of language, the same word is applied in senses which, although analogous to each other, are not precisely the same. It is impossible, indeed, to avoid giving to almost every word which is employed, various shades and modifications of signification, so that they shall denote sometimes a greater and sometimes a smaller number of simple notions. If however we allow that variety in the use of the same word in the course of the same argument, we are guilty of fallacious reasoning. When, for instance, it is affirmed that, *That which is greater than faith and hope is the highest Christian grace;* and that, *Charity* (love) *is greater than faith and hope;* and from these principles it is inferred that *charity* (almsgiving) *is the highest Christian grace;* the argument contains four terms. Again, if we reason thus; *That which consists in a tendency to promote the general happiness of man affords a good rule of social conduct;* but *Expediency consists in that tendency;* and therefore *Expediency affords a good rule of social conduct;* the argument is perfectly correct if the terms are applied throughout in the same meaning. But there is danger of its being perverted by some, who will acquiesce in the truth of the premiss in the purest sense of the word *expediency;* but will practically apply the conclusion in the corrupt sense of the word, namely, as signifying *that which, whether right or wrong,*

appears best adapted to their private interests or inclinations.

On the other hand, an argument must not be condemned when the terms, although apparently exceeding the legitimate number, are obviously reducible to three only. In this case there is merely a deviation from form, to which every correct material argument may easily be reduced. For example, it is rightly argued; *Whatever is opposed to the divine will must be ultimately injurious; but every violation of social rights is an offence against the precepts of Scripture; so that no injustice can possibly be expedient.* For although the argument apparently contains six terms, it is, in fact, equivalent to the following: *Nothing which is opposed to the divine will is expedient; Every act of injustice is opposed to the divine will;* therefore, *No acts of injustice are expedient.*

2. In omni Syllogismo sunt tres, et tres tantum, propositiones. Duæ præmissæ, in quibus Medium cum extremis seorsim conferatur: (nempe *Major*, in quâ cum majori; *Minor*, in quâ cum minori:) una *Conclusio*, in quâ extrema invicem committantur.

N. B. 1. Quod Major dici solet simpliciter, *Propositio*; Minor, *Assumptio*. 2. Quod Medium non ingreditur conclusionem, alias idem per idem probaretur; adeoque non essent tres termini.

The limitation to three terms necessarily implies that a syllogism does not admit of more or less than

three propositions. Two of these are occupied by the comparison of each extreme with the middle term; and the third consists in the statement of the result of that comparison.

Major premiss or Proposition,	*All sin*$^{\mu}$ *is injurious*^{M};
Minor premiss or Assumption,	*All pride*^{m} *is sin*$_{\mu}$:
Conclusion,	*All pride*^{m} *is injurious*M.

Here the major term (M) is *injurious:*
the minor term (^{m}) is *pride:*
the medium (μ) is *sin.*

The *major premiss* is that in which the middle term is compared with the *major* extreme; *All sin is injurious.*

The *minor premiss* is that in which the middle term is compared with the *minor* extreme; *All pride is sin.*

The *conclusion* is that in which the major and the minor extreme are brought together; *All pride is injurious.*

In the most perfect form of syllogisms, the major premiss is usually a general principle, which is calculated to approve itself to every man's judgment, and is therefore not likely to be called in question; on which account it is sometimes called, by way of eminence, the *Proposition*, and more frequently, the *Principle*. The minor premiss is, on the other hand, *assumed,* with particular reference to the conclusion which is to be deduced; (whence it receives the name *Assumption*, and is sometimes called, the *Fact;*) and it is more liable to objection. Thus, in the preceding example, it is probable that none would deny that *all sin is injurious*, though some might imagine themselves authorized to object

that *there are some kinds of pride which are not sinful*, and thus deny the *minor*, or, in other words, represent the *assumption* as unfounded.

It is more convenient, but by no means necessary to the accuracy of a syllogism, that the major premiss should be first in order. In material arguments it often occurs that the minor premiss is first; and still more frequently that the conclusion begins the sentence; or, to speak more accurately, that the question having been first stated, it becomes needless to repeat it in the form of a conclusion. Thus, *Habitual cheerfulness is the best promoter of health; for it checks those secret anxieties and those violent ferments which derange and wear out the constitution; and it cannot be denied that whatever possesses so excellent a quality must have that beneficial tendency.* Here the major extreme is, *the best promoter of health*; and the major premiss is the last proposition in the order of the sentence: the minor extreme is, *habitual cheerfulness*; and the proposition, *for it checks*, &c. is the minor premiss. The conclusion, which is not formally expressed, is the same as the *question*, by which the sentence is introduced, *Habitual cheerfulness is the best promoter of health.*

In the following apparent syllogism the middle term enters the conclusion.

Some of those who merit esteem are learned: But those who have laboured much and successfully in study are learned: Therefore the learned are men who merit esteem.

It has, indeed, been contended, that illative conversion is really a species of syllogistic argument. But the inference deduced by the process of conversion, although it is the result of the given proposition, is not actually different from it. Thus, the sentences, *Nothing expedient is sinful; None but a kind-hearted person is adapted to the care of*

children; are not distinct truths from those propositions of which they are, respectively, the simple and the negative converse; (namely, *Nothing sinful is expedient; All persons adapted to the care of children are kind-hearted;*) but are only the development of the same truths in a different form.

3. *Ancipiti* medio nihil conficitur. Neque enim affertur in hoc casu *unum aliquod idemque tertium* vel in quo extrema conveniant, vel cui unum conveniat, alterum differat.

Medium *non distributum* est *anceps*. Esto enim B terminus communis in b et β divisibilis; Ergo b et β sunt *opposita:* et tamen vere dicitur, Aliquod B est b, et Aliquod B est β. Quare aliquod B est Medium anceps.

A middle term which is used ambiguously will not authorize any conclusion. For example:

The end of a good soldier's life is the safety and peace of his country. But death is the end of a good soldier's life: Therefore his death is the safety and peace of his country. Here the middle term (*the end of a good soldier's life*) is compared in one sense (denoting *the aim, the object*) with the major extreme (*the safety and peace of his country*); and in a different sense (denoting *the close, the termination*) with the minor extreme, (*death.*) The medium, therefore, bears two significations: in consequence of which, the extremes are not compared with one and the same third term.

Mr. Pillet, in his description of English manners, affirms, that the disposition of the English to

suicide is evident from the number of *sculls* daily found in the Thames. He uses a doubtful or ambiguous middle term, confusing the small boat called *scull*, with the human *scull*. He argues thus:

A people whose chief river abounds in sculls (craniis) *is a people addicted to suicide. The English are a people whose chief river abounds in sculls* (cymbulis); *Therefore the English are a people addicted to suicide.*

A favourite argument of Voltaire was this; *The cause of evil is itself evil; The Christian religion is the cause of evil; it is therefore itself evil.* The fallacy lies in the ambiguity of the middle term. The *proximate and real cause* of evil is evil; but Christianity is only the *accidental cause*, or *occasion* of the divisions, bloodshed, and other evils, which have been perpetrated under the shelter of its name. The extremes therefore are not compared with one single term.

A frequent violation of this rule occurs in the use of an *undistributed middle term.* In this case the word is as truly *ambiguous* or *equivocal*, as if it were employed in two avowedly distinct significations.

For if the middle term is not distributed, it is a common noun taken in each premiss *particularly;* that is, denoting *some portion only* of the things signified by it. Consequently it may be employed in each of the premises to signify a *distinct part* of its whole extent; in which case the extremes are not compared with one and the same third term: as,

All metals are minerals;
Coal is a mineral: therefore,
Coal is a metal.

Here the middle term is not distributed; the

minerals referred to in the major premiss form a class distinct from and opposed to that class of *minerals* which is signified in the minor premiss. It is therefore a *doubtful* term. This will be rendered still more obvious by filling up the ellipsis of the sign; thus,

All metals are some *minerals.*
Coal is some *mineral.*

The same fundamental error occurs in the following arguments:

Some animals are not quadrupeds; But all elephants are animals; consequently some elephants are not quadrupeds.

Some who are indisposed to flatter retain unpolished habits; All virtuous men are indisposed to flatter: Therefore some virtuous men retain unpolished habits.

Some effectual check to the progress of seditious publications is absolutely essential to the safety of our country; The total abolition of the art of printing would prove an effectual check to their progress: Therefore the total abolition of the art of printing is absolutely necessary to the safety of our country.

Arbitror, propter Pythagoreorum admirationem, Numam quoque regem Pythagoreum a posterioribus existimatum: nam cum Pythagoræ disciplinam et instituta cognoscerent, regisque ejus æquitatem et sapientiam a majoribus suis accepissent, (ætates autem et tempora ignorarent propter vetustatem,) eum qui sapientia excelleret, Pythagoræ auditorem fuisse credunt. (*Cic. Tusc. Qu.* iv. 1.) That is, the Romans reasoned thus:

The followers of Pythagoras were remarkable for practical wisdom;

Numa Pompilius was remarkable for practical wisdom:

Therefore Numa Pompilius was a follower of Pythagoras.

It is obvious that this rule is only a branch of the first.

Quare Medium in præmissis *semel ad minimum distribui* debet; sufficit tamen, si vel semel distribuatur. Nam 1. ad probandum A est C, conveniat C *alicui* B, et A *omni;* Ergo *eidem alicui* B: Ergo affertur unum aliquod idemque tertium &c. 2. ad probandum A non est C, conveniat C *alicui* B, et A differat *omni;* Ergo *eidem alicui* B: Ergo affertur &c.

The middle term will be free from ambiguity if it is *once* distributed. It is therefore indifferent to the correctness of the argument whether it is distributed *only* once, or in *both* the premises. For if one of the extremes agrees with *some part of the medium,* and the other extreme agrees with *every thing which is signified by the medium:* this extreme must also agree with the same part of the medium with which the former agrees: because the part is included in the whole.

Again, if one extreme agrees with *some part* of the things denoted by the middle term; and the other extreme *wholly* differs from the middle term *taken in its utmost extent;* then this extreme must also differ from the *part* of the middle term with which the former extreme agrees. So that in each case, the medium is virtually the same in both the premises.

All injustice[D] *is evil;*	B is A.
Persecution is injustice:	C is B.
Persecution is evil.	C is A.

To prove that (A) *evil* agrees with, that is, is correctly predicated of (C) *persecution*; let (C) *persecution* agree with *some* (B) *injustice*; and let (A) *evil* agree with *all* (B) *injustice*. But *all injustice* comprehends every branch of *some injustice*; therefore (A) *evil* agrees with the same *some injustice* with which (C) *persecution* agrees, and they are duly compared with one and the same third term.

Acquisitions[D] *of real value are not within the reach of the idle;*	B is not A.
But science and literature are acquisitions of real value;	C is B.
Consequently they are not within the reach of the idle.	C is not A.

The major extreme, *all benefits within the reach of the idle*, universally disagrees with *all acquisitions of real value*, and consequently disagrees with those special *acquisitions of real value* with which *science and literature* agree, and which constitute the real term of comparison or middle term.

The distribution of the middle term in *both* the premises is of much less frequent occurrence. The following is an example:

All metals are combustible;
All metals are simple substances:
Therefore some simple substances are combustible.

But this argument would be equally forcible if the minor premiss were, *Some metals are simple substances;* in which case the middle term would be only once distributed.

4. Processus *ab extremo non distributo* in præmissis, ad *idem distributum* in conclusione, *vitiosus* est. Nam ex *aliquo* non sequitur *omne*. Esto enim verum quod aliquod; Ergo potest

esse verum quod aliquod non; (nam Subcontrariæ possunt esse simul veræ:) Ergo de aliquo potest affirmari quod non de omni. Esto rursus verum quod aliquod non; Ergo potest esse verum quod aliquod: Ergo de aliquo potest negari quod non de omni.

An argument which professes to deduce an assertion involving any term in its *universal* application from a premiss in which that term is only *partially* applied, must be unsound. For, by the principles of opposition of propositions, the truth of an universal cannot be inferred from the truth of the particular; and subcontrary propositions may be both true. Consequently the agreement or disagreement of the *universal* or *distributed* term cannot be inferred from the agreement or disagreement of the *particular* or *undistributed* term. If it is true, *Some wars are just*, it may also be true that *Some wars are not just*. Therefore it cannot be inferred from either, that *All wars are just;* or that *No wars are just*. Therefore that may be affirmed or denied of *some*, which cannot be affirmed or denied of *all*.

The following apparent syllogisms are faulty in this respect:

No tale-bearer is worthy of confidence;
All tale-bearers are great talkers; therefore,
No great talkers[D] *are worthy of confidence.*

Here the process of the minor extreme is illicit. The predicate of the minor premiss is *some great talkers;* therefore the only conclusion which the argument authorizes is, *Some great talkers are not worthy of confidence.*

All traitors deserve capital punishment;
Some murderers are not traitors: therefore,
Some murderers do not deserve capital punishment[D].

The process of the major extreme is here illicit. In its premiss, it is the predicate of an affirmative, and therefore *is not* distributed; in the conclusion, being the predicate of a negative, it *is* distributed. No inference can be deduced from these premises.

The study of nature is highly beneficial in expanding the mind; but an acquaintance with ancient languages is a very different thing from the study of nature; and consequently has not the same beneficial effect. Here the distribution of the *major* extreme is inaccurate: the premiss speaks of *some things highly beneficial in expanding the mind;* the conclusion makes an assertion in reference to *all things beneficial in expanding the mind.*

We know that our sight and our touch are bodily senses; now experience teaches us how frequently both sight and touch are deceived; we infer then that our bodily senses are universally liable to be misled. Here the distribution of the *minor* term is erroneous. The inversion of the order of the premises (the minor premiss being first) is a deviation from the form, but does not render the argument incorrect. The premises will admit of the particular conclusion, *Some of our senses may be deceived.*

This illicit process from an undistributed to a distributed extreme is a violation of the first rule; for the pretended syllogism contains four terms. It is therefore inconsistent with the fundamental principle of syllogistic argument; for the term compared with the middle term is not the identical term of the question. Thus in the examples above given, *All great talkers, all who deserve capital punishment,* &c. are the terms of the question; but *some great talkers, some who deserve capital punishment,* are the terms actually compared with the

middle term, although they neither are the same as the former, nor even virtually imply them.

5. *Præmissis negantibus* nihil probatur: Affertur enim tertium cui utrumque extremum differt; non autem cui vel *utrumque conveniat*, vel *unum conveniat, alterum differat.*

The disagreement of any two terms with a third term does not afford any ground for inference as to their mutual agreement or difference; since neither of the two primary axioms is applied. The absurdity of the following sentences, though they are placed in syllogistic form, is obvious.

No wicked men are happy; but some poor men are not wicked; therefore some poor men are happy: or, *therefore some poor men are not happy.*

No rich men are exempt from death; nor are they free from error; therefore those who are free from error are exempt from death: or, *therefore none who are free from error are exempt from death.*

6. Si *præmissarum altera* sit *negativa*, erit etiam *Conclusio.* Nam præmissarum reliqua est affirmativa: Ergo extremorum unum differt medio, alterum convenit: Ergo extrema differunt inter se: Ergo conclusio est negativa.

Contra, si *Conclusio* sit *negativa*, erit etiam *altera præmissarum.* Nam extrema differunt inter se: Ergo eorum unum convenit

medio, alterum differt: Ergo præmissarum altera affirmat, reliqua negat.

1. A *negative premiss* must be followed by a *negative conclusion.* For it asserts the disagreement between one of the extremes and the medium; while the other premiss, which must (by the preceding rule) be affirmative, asserts the agreement of the other extreme with the medium. Therefore (by the second canon) the extremes disagree, and the conclusion is negative. For example,

No mere man is infallible; now the pope is but a man; therefore the pope is not infallible.

2. On the other hand, a *negative conclusion* cannot be proved except by the use of *one negative premiss*, the other premiss being affirmative. For a negative conclusion asserts the mutual disagreement of its extremes. And this disagreement can be established only by means of a middle term which agrees with one of those extremes and differs from the other.

If, for example, the question to be proved is, *Paganism is not a harmless evil*, it is necessary to adduce some medium which agrees with *paganism*, and differs from *a harmless evil;* or, vice-versâ, one which shall agree with the latter, and differ from the former. The word, *Whatever originates in a wilful departure from the truth*, affords a middle term of the former character; the word, *that which is occasioned by ignorance alone*, will serve for a medium of the latter description. On these terms respectively are founded the two following arguments:

It is sufficiently evident that paganism must have originated in a wilful departure from the truth: indeed, its heinousness as involving the guilt of presumptuous opposition to the Divine will, is not to be disputed. It is, therefore, but a vain apology for

heathenism to treat it as a harmless invention of poor unenlightened mortals, labouring, with good intentions but under invincible ignorance, to discover the true God, and to perform to him an acceptable service.

That system of error, indeed, of which ignorance alone was the cause, might be pleaded for as a harmless invention of poor unenlightened mortals; but ignorance could not be the cause of the introduction of false divinities by the immediate descendants of Cain and of Noah; therefore heathenism cannot be vindicated on any plea of harmlessness.

The substance of these *material* arguments, thrown into *form*, may thus be concisely expressed:

Nothing which originates in a wilful departure from the truth is a harmless evil;

Paganism originates in a wilful departure from the truth:

Therefore paganism is not a harmless evil.

Every harmless evil is occasioned by ignorance alone;

Paganism is not occasioned by ignorance alone:

Therefore paganism is not a harmless evil.

It has been observed (p. 96, 97.) that some propositions apparently negative are really affirmative; the adverb of negation being intended to qualify, not the copula, but one of the extremes; and that, on the same principle, every negative proposition may be, ad libitum, employed as affirmative. Hence arguments apparently inconsistent with these fundamental rules concerning negatives in a syllogism may yet be correct. For instance;

He who loves not his neighbour is not a true Christian; but the slanderer loves not his neighbour; therefore the slanderer is not a true Christian.

Here the minor premiss is affirmative; since the particle *not* belongs to the predicate, as is evident by comparing the same term in the major premiss; for the medium of the syllogism is, *he who loveth not*

his neighbour. The argument therefore may be thus expressed: *No men-who-love-not-their-neighbour are true Christians; but all slanderers are men-who-love-not-their-neighbour; therefore no slanderers are true Christians.* Or else instead of the major premiss may be used its converse, (by contraposition,) and then the minor premiss will be negative; *All true Christians love their neighbour; no slanderers love their neighbour; therefore no slanderers are true Christians.*

Again; *That which is not reducible to parts is eternal; the human soul is not reducible to parts; therefore it is eternal.* This syllogism (in which an affirmative conclusion is apparently deduced from a negative premiss) consists of three affirmative propositions; the middle term being, *that which is not reducible to parts.* It might be correctly, although harshly, expressed, *Every thing non-reducible to parts is eternal; the human soul is non-reducible to parts; therefore the human soul is eternal.* Or the word *indissoluble* may be substituted as the middle term.

7. *Præmissis particularibus* nihil probatur. Nam præmissarum altera affirmat: Ergo in illâ medium non distribuitur: Ergo distribui debet in reliquâ: Ergo illa est negativa in quâ medium prædicatur; Ergo conclusio negativa: Ergo *prædicatum* ejus *distribuitur,* quod in præmissis *non est distributum;* Fuit enim vel affirmativæ terminus alter, vel subjectum negativæ; horum vero nullus distribuitur.

1. If both the premises in a syllogism be *particular affirmative* propositions, they cannot contain any distributed term. In this case therefore the

middle term is not distributed, and (by rule 3) no conclusion can be deduced. Thus no inference can be drawn from such premises as, *Some men are virtuous, but some are learned. Some of the planets are attended with satellites; but several of the heavenly bodies which the naked eye can discern are planets.*

2. If one of the premises be *negative*, it will contain the only distributed term in the antecedent of the syllogism, which must therefore be the middle term. It follows, that neither of the extremes is distributed in the premises, and consequently (by rule 4) neither may be distributed in the conclusion. But the conclusion must (by rule 6) be negative; and in negative propositions one term at least must be distributed. In this case therefore there will be an illicit process of one extreme.

This may be illustrated by the following schemes.

I.	*Med.*	*Maj.*	O.	*Maj.*	*Med.*^{D}
O.	*Min.*	*Med.*^{D}	I.	*Min.*	*Med.*
O.	*Min.*	*Maj.*^{D}	O.	*Min.*	*Maj.*^{D}

In both these cases the erroneous process from an undistributed major extreme in the premiss to the same distributed in the conclusion is manifest. Accordingly the following arguments are totally incorrect:

Some of the older strata of the earth are not characterized by animal remains; Several of the superior strata are strongly characterized by them; therefore some of these are not to be classed among the older strata.

Some strictly virtuous men possess qualities which render them unpleasant companions; Some wealthy persons are not strictly virtuous; consequently some wealthy persons do not possess those qualities which render them unpleasant companions.

8. Si *præmissarum altera particularis* sit, *conclusio* quoque *particularis* est. Sit enim 1°. Præmissarum altera particularis affirmativa: Ergo in illâ nec extremum suum nec medium distribuitur: Ergo medium distribuitur in reliquâ, quæ etiam Universalis est, sitque (1.) Affirmativa: Ergo in illâ medium subjicitur, et extremum medio attributum *non distribuitur:* Ergo *neutrum extremorum distribuitur* in præmissis: Ergo *neutrum* in conclusione: Ergo conclusio particularis affirmativa est. Sit (2.) Negativa: Ergo conclusio negativa: sed debet habere extremum *non distributum:* Ergo particularis negativa est.

Sit 2°. Præmissarum altera particularis negativa: Ergo reliqua Universalis affirmativa: Ergo in præmissis duo tantum termini distribuuntur: Ergo conclusio habet extremum *non distributum:* Ergo cum negativa sit, erit etiam particularis.

If one of the premises be *particular,* the other must be *universal.*

The particular premiss must be either *affirmative* or *negative.* If it be *affirmative,* the universal premiss may be either affirmative or negative. If it be *negative,* the universal premiss must be affirmative. Hence arise three forms in which the premises may occur; namely, (1.) A. I. or I. A.; (2.) E. I.; and (3.) A. O. or O. A.

(1.) If the premises are both affirmative; the par-

ticular does not distribute either of its extremes, and the universal distributes only its subject; this distributed subject must therefore be the middle term. Consequently neither of the extremes of the question are distributed in the premises; therefore they must not be distributed in the conclusion; a limitation which is incompatible with any other species of proposition than the *particular affirmative*. Of this kind therefore the conclusion must be. Thus,

A.	*Med.*^{D}	*Maj.*	I.	*Med.*	*Maj.*
I.	*Min.*	*Med.*	A.	*Med.*^{D}	*Min.*
I.	*Min.*	*Maj.*	I.	*Min.*	*Maj.*

All minerals are fossils; but some of the most useful substances in existence are minerals: therefore some of the most useful substances in existence are fossils.

Some recreations are necessary to the preservation of our health and spirits; all recreations however are liable to be carried to excess; so that some things liable to be carried to excess are necessary for the preservation of our health and spirits.

(2.) If the antecedent consists of a *particular affirmative* and *an universal negative* premiss, the former distributes neither term; the latter distributes both: of which, one is necessarily the middle term, and the other is one of the extremes of the question. Therefore only one extreme can be distributed in the conclusion. But the negative premiss requires a *negative* conclusion; and a negative proposition distributing only one extreme must be *particular*.

E.	*Med.*^{D}	*Maj.*^{D}	E.	*Maj.*^{D}	*Med.*^{D}
I.	*Min.*	*Med.*	I.	*Min.*	*Med.*
O.	*Min.*	*Maj.*^{D}	O.	*Min.*	*Maj.*^{D}

Upright and honest men ought never to be treated with contempt: Some men of very mean attainments

and weak judgment are upright and honest; therefore some men of mean attainments and weak judgment ought not to be treated with contempt.

(3.) If the premises are O and A, they contain two distributed terms; of which one being the middle term, it remains that one only can be an extreme of the question; consequently only one distributed extreme is admissible into the conclusion. But the conclusion must be *negative* (on account of the negative premiss), and therefore, with that limited distribution, it can be no other than *particular*.

A. *Maj.*^{D} *Med.*	O. *Med.* *Maj.*^{D}
O. *Min.* *Med.*^{D}	A. *Med.*^{D} *Min.*
O. *Min.* *Maj.*^{D}	O. *Min.* *Maj.*^{D}

All real virtues are consistent with truth; but there are some kinds of candour which are not consistent with truth; therefore some kinds of candour are not real virtues.

These two rules are corollaries from the fourth; since an universal conclusion cannot be inferred from a particular premiss without an illicit process of one of the extremes. As, *Some good men have been drowned; but no pirates are good men; therefore no pirates have been drowned.* They might therefore have been conveniently appended to the fourth rule; were it not that the arguments by which they are established require the previous knowledge of the rules concerning negative propositions. It was consequently necessary that those should have the precedence.

Quod si Conclusio particularis sit, non necesse est præmissarum alteram particularem esse. Fieri enim potest, ut instituto meo sufficiat subalternata, quando subalternans potuit

inferri. Et cum illæ sint simul veræ, liberum est utramvis inferre. Quanquam stricte loquendo, *argumentatio non est accurata;* nam subalternatæ veritas *non immediate deducitur ex præmissis*, sed ex subalternante.

Although a particular premiss requires a particular conclusion, it does not follow reciprocally, that a particular conclusion requires a particular premiss. For instance,

Whatever wholly engrosses the soul renders men incapable of judging correctly concerning any future pleasure or pain: But all present experience of pleasure or pain wholly engrosses the soul: Therefore some present experience of pleasure or pain renders men incapable of judging correctly concerning those which are future.

This syllogism is not incorrect as to form; yet the more immediate conclusion from the premises would be, *Therefore* EVERY *present experience of pleasure or pain renders men incapable*, &c.; whence the subalternate, *some present experience*, &c. is to be inferred by the laws of opposition.

But if only the particular conclusion be required, it is more judicious to lay down in the premises no more than is necessary to authorize that conclusion. To do otherwise is to afford to an opponent a needless opportunity to cavil. In the above instance it may be objected to the minor premiss, that it is not true that all *present experience of pleasure wholly engrosses the mind;* and the objection, though in reality it does not affect the argument, may appear so to do to superficial readers or hearers, and may, at the least, divert the attention from the pith and force of the argument. This inconvenience may be avoided by adopting the *particular* for the *universal* premiss; thus, *It generally occurs,* (or,

it often occurs, or *it sometimes occurs,) that present experience of pleasure wholly engrosses the soul; and therefore such present experience generally* (or *often,* or *sometimes*) *renders us incapable of judging correctly concerning future pleasure or pain.*

Two universal propositions may however bear such a relation to each other as will authorize no more than a particular inference: as,

All the stars are more distant from us than we are from the sun; But all the stars shed some degree of light on the earth; Therefore some things which shed a degree of light on the earth are more distant from us than we are from the sun.

An universal conclusion (*all things which shed light,* &c.) would offend against the fourth rule, by distributing the minor extreme when not distributed in its premiss. Yet the true conclusion (*some things which shed light,* &c.) might be drawn, if either of the premises were expressed particularly. As the argument stands, the minor premiss is exposed to the objection that there are probably many stars the light of which has not yet reached the earth; which objection could not apply to it if thus expressed;

All the stars are more distant from us than we are from the sun; but some (or *many*) *stars shed light on the earth; therefore some* (or *many*) *things which shed light on the earth are more distant from us than we are from the sun.*

Particular terms vary much in their extent. And (on the same principle on which the conclusion must not distribute a term which is not distributed in the premiss) it is inaccurate to admit any particular term in the conclusion in a more extensive application than that in which it had been employed in the premiss. If however the limitation be expressed, the limited term assumes the character of a singular word. For instance,

All practices condemned in Scripture should be avoided; But many practices prevalent among men are condemned in Scripture: Therefore many practices prevalent among men should be avoided. That is, *A multitude of practices*, &c. as a singular term.

All animals which have gills are fishes;
Most of the inhabitants of the ocean have gills:
Therefore most of the inhabitants of the ocean are fishes.

Nero was cruel; but he was also a musician; therefore a musician (some one musician) was cruel.

Syllogismi generales regulas complectitur hoc tetrastichon.

Distribuas medium; nec quartus terminus adsit:

Utraque nec præmissa negans, nec particularis:

Sectetur partem conclusio deteriorem:

Et non distribuat, nisi cum præmissa, negetve.

The first of these lines expresses the substance of the first three rules above given; the second line refers to the fifth and seventh rules; the third to the first branch of the sixth rule and to the eighth rule; and the last line to the fourth rule and to the latter part of the sixth. The expression of the third line is derived from a fancied superiority of universal propositions over particulars; and of affirmatives over negatives.

All these rules of structure are nothing more than the application of the two primary canons to

particular cases. For they simply amount to this, that when those circumstances occur which are prohibited by the rules, there is no comparison of two objects with a third term, with which both agree, or with which one agrees and the other disagrees. Consequently, the arguments in support of these rules consist solely in an appeal to those canons.

The best means of familiarizing the mind with these rules is to apply them in the examination of syllogisms. And for this purpose it may be most convenient to adopt the following method. Obtain a definite apprehension of the question, or proposition to be proved; and of its component parts or extremes. Then trace the middle term, or hinge on which the argument turns. Reject needless words, reduce synonymous expressions to the same form, and supply whatever is elliptically left to the judgment of the reader or hearer. Having thus reduced the *material* argument into a *formal* syllogism; first, observe whether the terms are correct both as to number and sense; (rules 1. and 3.) and whether the propositions are correct as to number. (rule 2.) Then, compare the syllogism with the rules concerning particular and negative propositions; (rules 5—8.) and lastly, examine the distribution of the middle term, (rule 3.) and of the extremes, (rule 4.)

For example, let the following *material* argument be given:

Confidence in promises is essential to the intercourse of human life. But there could be no confidence in promises, if men were not obliged to perform them. The obligation therefore to perform promises is essential, to the same ends, and in the same degree. (*Paley.*)

Here the question or problem is, *The obligation to perform promises is essential to the intercourse*

of human life. The term of comparison is, (not, *confidence in promises,* but) *a quality necessary to create confidence in promises;* for the middle clause of the above sentence is equivalent to, *The obligation to perform promises is necessary to create confidence in promises.* Therefore the major premiss is, *Whatever is necessary to create confidence in promises is essential to the intercourse of human life:* which is implied in the first clause. The *formal* syllogism is as follows:

Whatever is necessary to create confidence in promises is essential to the intercourse of human life; but the obligation to perform promises is necessary to create confidence in promises; therefore, the obligation to perform promises is essential to the intercourse of human life.

In which, (1st,) the terms are correct in sense and number; (2dly,) the propositions are correct in number and arrangement; (3dly,) the rules of negative and particular propositions are not violated; (4thly,) the middle term is once distributed; and (lastly,) the minor extreme, which is distributed in the conclusion, is also distributed in its premiss.

Again; let this argument be examined:

The care of the poor ought to be the principal object of all laws; for this plain reason, that the rich are able to take care of themselves. (*Paley.*)

Here the question or problem may be stated thus: *The poor ought to be the principal object of care in all laws.* The reason given is, *The rich are able to take care of themselves.* But this is not, in fact, the true reason, but another proposition which is (not necessarily, but by virtue of the connexion in which it stands) implied in it, namely, *The rich alone are able to take care of themselves;* that is, *the not-rich,* or *the poor, are unable to take care of themselves.* The argument further proceeds on the supposition that every reader will sponta-

neously feel that *They who are unable to take care of themselves ought to be the principal object of care in all laws.* The syllogism therefore is:

They who are unable to take care of themselves ought to be the principal object of care in all laws: but the poor are unable to take care of themselves: therefore the poor ought to be the principal object of care in all laws.

Which syllogism will be found consistent with each of the above general rules.

Several syllogisms both correct and incorrect are given, for the sake of practice, at the close of the Appendix.

§. 4. *De Modis Syllogismorum.*

SUPEREST per hasce regulas inquirere, quot modis componi possunt tres propositiones de inesse, ut syllogismum conficiant. Quâ in inquisitione duo spectanda sunt:

1. *Modus*, sive legitima *determinatio propositionum* secundum quantitatem et qualitatem.

2. *Figura*, sive legitima *dispositio medii* cum partibus quæstionis.

That which renders the mind acquainted with its own powers is highly beneficial. Metaphysical studies render the mind acquainted with its own powers; therefore metaphysical studies are highly beneficial.

1. To describe this syllogism as having the middle term employed as the subject of the major extreme, and predicated of the minor extreme, is to designate it by the *figure* to which it belongs. For such a description points out the arrangement

of the middle term with the two extremes or parts of the question or conclusion; which constitutes the *figure* of a syllogism.

2. To describe the same syllogism as consisting of three universal affirmative propositions, is to state its *mode*; that is, the proper designation of the propositions according to their quantity and essential quality.

Modi sunt in universum 64. Nam, ut supra ostensum est, ad syllogismum faciunt propositiones tantum quatuor, A. E. I. O. Quare concipi potest quadruplex tantum major in syllogismo; cuilibet vero majori quadruplex tantum minor adjungi: unde 16 paria præmissarum: et singulis præmissis quadruplex tantum conclusio; unde 64 Modi syllogismorum.

AAA. AAE. AAI. AAO. *AEA. AEE. AEI. AEO. *AIA. AIE. AII. AIO. *AOA. AOE. AOI. AOO.

EAA. EAE. EAI. EAO. *EEA. EEE. EEI. EEO. *EIA. EIE. EII. EIO. *EOA. EOE. EOI. EOO.

IAA. IAE. IAI. IAO. *IEA. IEE. IEI. IEO. *IIA. IIE. III. IIO. *IOA. IOE. IOI. IOO.

OAA. OAE. OAI. OAO. *OEA. OEE. OEI. OEO. *OIA. OIE. OII. OIO. *OOA. OOE. OOI. OOO.

This table represents all the possible modes in which any three out of the four kinds of propositions can be placed together. The majority of them however must be inadmissible unless common sense were banished from the art of reasoning; for the rules of structure are nothing more than an arrangement of the dictates of common sense. The change of type distinguishes those of the combinations which produce correct syllogisms.

Ex his excluduntur sedecim per regulam 5. propter præmissas negantes, viz. EEA. EEE. EEI. EEO. *EOA. EOE. EOI. EOO. *OEA. OEE. OEI. OEO. *OOA. OOE. OOI. OOO. Duodecim per reg. 7. propter præmissas particulares, viz. IIA. IIE. III. IIO. *IOA. IOE. IOI. IOO. *OIA. OIE. OII. OIO. Duodecim per reg. 6. quia præmissarum altera negat, sed non conclusio, viz. AEA. AEI. AOA. AOI. *EAA. EAI. EIA. EII. *IEA. IEI. *OAA. OAI. Octo per reg. 8. quia præmissarum altera particularis est, sed non conclusio, viz. AIA. AIE. AOE. *EIE. *IAA. IAE. IEE. *OAE. Quatuor per reg. 6. quia conclusio negativa est sed neutra præmissarum, viz. AAE. AAO. AIO. *IAO. Denique unus per reg. 4. propter processum vitiosum, viz. IEO.

Excluduntur igitur in universum modi 53 = 16 + 12 + 12 + 8 + 4 + 1; e quibus multi

contra plures regulas peccant, quamvis una tantum notetur.

Supersunt (64—53=) 11 modi ad syllogismum utiles, viz. AAA. AAI. AEE. AEO. AII. AOO. *EAE. EAO. EIO. *IAI. *OAO.

Every correct syllogistic argument is reducible to a form corresponding with one or other of these eleven modes.

§. 5. *Figuræ Syllogismorum.*

FIGURÆ Syllogismorum sunt quatuor. Nam Medium, quod cum utroque extremo comparatur, vel 1. subjicitur majori et tribuitur minori, et fit *figura prima*; vel 2. tribuitur utrique, et fit *secunda*; vel 3. subjicitur utrique, et fit *tertia*; vel 4. tribuitur majori et subjicitur minori, et fit *quarta*. Quæ omnia sequenti schemate declarantur.

Dispositio trium terminorum, scilicet majoris A, medii B, minoris C; in Figurâ

1â.	2â.	3â.	4â.
B. A.	A. B.	B. A.	A. B.
C. B.	C. B.	B. C.	B. C.
C. A.	C. A.	C. A.	C. A.

Fig. 1.	Fig. 2.	Fig. 3.	Fig. 4.
MED. *Maj.*	*Maj.* MED.	MED. *Maj.*	*Maj.* MED.
Min. MED.	*Min.* MED.	MED. *Min.*	MED. *Min.*
Min. *Maj.*	*Min.* *Maj.*	*Min.* *Maj.*	*Min.* *Maj.*

The figures are not arbitrarily arranged, but according to the frequency of their use. The first figure is of the greatest practical utility; the fourth is of the least, or rather, of none. Of the other two, the second is of more frequent occurrence and admits more extensive conclusions than the third.

Quare quælibet figura excludit adhuc quinque modos: nempe,

1. Propter medium non distributum: Prima duos IAI. OAO. Secunda quatuor AAA. AAI. AII. IAI. Quarta duos AII. AOO.

2. Propter processum majoris illicitum: Prima et Tertia tres AEE. AEO. AOO. Secunda et Quarta OAO.

3. Propter processum minoris illicitum: Tertia et Quarta duos AAA. EAE.

It is obvious that the distribution of the terms must be affected by their arrangement; so that a mode which is correct under one figure will not be so under another. For example, let the mode AAA be successively applied to each of the figures.

1. *They who participate in the security of life and property conferred by a well-arranged system of government are bound by the strongest obligations to contribute to the maintenance of that government; But all Englishmen participate in that security; Therefore all Englishmen are bound to contribute to the maintenance of government.*

2. *All the moral virtues are habits; But skill in the operations of any mechanical art is a habit; Consequently skill in the operations of any mechanical art is a moral virtue.*

3. *All ostriches have short wings unsuited for*

flight; But all ostriches are land-birds; Therefore all land-birds have short wings unsuited for flight.

4. *Coal is a stratum of the earth containing much vegetable matter; But whatever strata contain vegetable matter are of a later formation than granite; Therefore whatever is of a later formation than granite is coal.*

The syllogism in the *first* figure is *correct*. That in the *second* figure is *incorrect*, for the middle term is not distributed. The syllogisms in the *third* and *fourth* figures are *incorrect*, on account of the illicit process of the minor extreme. And a comparison of these errors with the particular disposition of the terms will evince that they belong, not merely to the syllogisms adduced, but to any syllogisms in those figures consisting of three universal affirmative propositions; that is, in the mode AAA.

In like manner each of the modes, except EIO and EAO, will be found inaccurate in one or more figures.

Supersunt Modi certo et necessario concludentes 24; sex in quâlibet Figurâ.

In Figurâ I.

*b*A*r*	Omne	B	est	A.	
*b*A	Omne	C	est	B:	*Ergo*
*r*A	Omne	C	est	A.	
*c*E	Nullum	B	est	A.	
*l*A	Omne	C	est	B:	*Ergo*
*r*E*nt*	Nullum	C	est	A.	
*d*A	Omne	B	est	A.	
*r*I	Aliquod	C	est	B:	*Ergo*
I	Aliquod	C	est	A.	

*f*E	Nullum	B	est	A.	
*r*I	Aliquod	C	est	B:	*Ergo*
O	Aliquod	C	non est	A.	
A	Omne	B	est	A.	
A	Omne	C	est	B:	*Ergo*
I	Aliquod	C	est	A.	
E	Nullum	B	est	A.	
A	Omne	C	est	B:	*Ergo*
O	Aliquod	C	non est	A.	

1. Barbara.

Those who derive benefit from every exertion of their industry are more likely to be industrious than labourers employed by the day; Journeymen who work by the piece derive benefit from every exertion of their industry; Therefore journeymen who work by the piece are more likely to be industrious than labourers employed by the day.

2. Celarent.

No real hardship upon individuals should be authorized by legislative enactment; The impress of sailors is a real hardship upon individuals; Therefore the impress of sailors should not be authorized by legislative enactment.

3. Darii.

Every thing which obstructs the free course of justice deserves the reprobation of the virtuous; There are modes of enforcing the strict letter of the law, which obstruct the free course of justice; Therefore there are modes of enforcing the strict letter of the law which deserve the reprobation of the virtuous.

4. FERIO.

Those who endure dangers and face death merely for the sake of acquiring glory to themselves, without being influenced by any desire to benefit their country, are not possessed of true fortitude; But it cannot be denied that several of the heroes of antiquity endured dangers and faced death merely for the sake of acquiring glory to themselves, without being influenced by any desire to benefit their country; Consequently, several of the heroes of antiquity were not possessed of true fortitude.

5. AAI.

Every thing which belongs to man is imperfect; All the arts of civilization are of human invention; Therefore some of [*or*, all] the arts of civilization are imperfect.

6. EAO.

No change of place can satisfy the discontented; All expeditions to foreign countries consist in change of place; Therefore some expeditions to foreign countries do not satisfy the discontented; [*or*, no expeditions, &c.]

In Figurâ II.

*c*E*s*	Nullum	A	est	B.
A	Omne	C	est	B: *Ergo*
*r*E	Nullum	C	est	A.
*c*A*m*	Omne	A	est	B.
E*s*	Nullum	C	est	B: *Ergo*
*tr*E*s*	Nullum	C	est	A.

*f*E*s*	Nullum	A	est	B.	
*t*I	Aliquod	C	est	B:	*Ergo*
*n*O	Aliquod	C	non est	A.	
*b*A*r*	Omne	A	est	B.	
O*k*	Aliquod	C	non est	B:	*Ergo*
O	Aliquod	C	non est	A.	
E	Nullum	A	est	B.	
A	Omne	C	est	B:	*Ergo*
O	Aliquod	C	non est	A.	
A	Omne	A	est	B.	
E	Nullum	C	est	B:	*Ergo*
O	Aliquod	C	non est	A.	

1. Cesare.

No conscientious person wilfully violates a solemn engagement; Every careless clergyman wilfully violates a solemn engagement: Therefore no careless clergyman is a conscientious person.

2. Camestres.

All those who are qualified for sea-service must possess some knowledge of the arts of navigation; Mere inland watermen do not possess any knowledge of the arts of navigation: Therefore mere inland watermen are not qualified for sea-service.

3. Festino.

No man of sound sense can despise the study of the classics; Some modern pretenders to literature

do, however, despise the study of the classics: Therefore some modern pretenders to literature are not men of sound sense.

4. Baroko.

All the fixed stars emit light from themselves; Yet there are some of the heavenly bodies which do not emit light from themselves: Therefore some of the heavenly bodies are not fixed stars.

5. EAO.

Nothing unchangeable is imperfect; But all human laws are imperfect: Consequently some human laws are not [*or*, no human laws are] unchangeable.

6. AEO.

All brutes are destitute of reason and speech; Men, on the contrary, are not destitute of those valuable gifts: Whence it is to be safely inferred that some men are not [*or*, no men are] brutes.

In Figurâ III.

*d*A*r*	Omne	B	est	A.	
A*p*	Omne	B	est	C:	*Ergo*
*t*I	Aliquod	C	est	A.	
*f*E*l*	Nullum	B	est	A.	
A*p*	Omne	B	est	C:	*Ergo*
*t*O*n*	Aliquod	C	non est	A.	
*d*I*s*	Aliquod	B	est	A.	
A*m*	Omne	B	est	C:	*Ergo*
I*s*	Aliquod	C	est	A.	

*b*O*k*	Aliquod	B	non est	A.	
A*r*	Omne	B	est	C:	*Ergo*
*d*O	Aliquod	C	non est	A.	
*d*A*t*	Omne	B	est	A.	
I*s*	Aliquod	B	est	C:	*Ergo*
I	Aliquod	C	est	A.	
*f*E*r*	Nullum	B	est	A.	
I*s*	Aliquod	B	est	C:	*Ergo*
O*n*	Aliquod	C	non est	A.	

1. DARAPTI.

To be ashamed of one's birth, profession, or rank in life, has been represented as the result of modesty; whereas in reality it is a symptom of pride. So that even that which is a symptom of pride has been represented as the result of modesty.

2. DISAMIS.

Some practices which the divine law allows are under particular circumstances inexpedient; All practices which the divine law allows are in themselves consistent with holiness: Therefore some things in themselves consistent with holiness are under particular circumstances inexpedient.

3. DATISI.

Every kind of pride is wholly inconsistent with the spirit of true religion; Yet there are several kinds of pride which are highly commended by the world: Therefore there are feelings highly commended by the world which are wholly inconsistent with the spirit of true religion.

4. Felapton.

No conspiracies against the liberty of the country lay any just obligation on the conscience; All such conspiracies however have the nature of contracts: Therefore some contracts do not lay any just obligation on the conscience.

5. Bokardo.

Some compositions of an imitative nature, calculated by sublimity of idea and beauty of diction to expand and delight the mind and to excite every noble passion, are not written in verse; All such compositions however are justly called poems: Therefore some works justly called poems are not written in verse.

6. Ferison.

No prejudices are compatible with a state of perfection; But some prejudices are innocent: Therefore some innocent things are not compatible with a state of perfection.

In Figurâ IV.

*br*A*m*	Omne	A	est	B.	
A*n*	Omne	B	est	C:	*Ergo*
*t*I*p*	Aliquod	C	est	A.	
*c*A*m*	Omne	A	est	B.	
E*n*	Nullum	B	est	C:	*Ergo*
E*s*	Nullum	C	est	A.	
*d*I*m*	Aliquod	A	est	B.	
A*r*	Omne	B	est	C:	*Ergo*
I*s*	Aliquod	C	est	A.	

*f*E*s*	Nullum	A	est	B.	
A*p*	Omne	B	est	C:	*Ergo*
O	Aliquod	C	non est	A.	
*fr*E*s*	Nullum	A	est	B.	
I*s*	Aliquod	B	est	C:	*Ergo*
O*n*	Aliquod	C	non est	A.	
A	Omne	A	est	B.	
E	Nullum	B	est	C:	*Ergo*
O	Aliquod	C	non est	A.	

1. Bramantip.

All diamonds consist of carbon; but all carbon is combustible: Therefore some combustible substances are diamonds.

2. Camenes.

All the planets are opaque bodies; No opaque bodies are capable of transmitting light in any other way than by reflection: Therefore bodies capable of transmitting light in any other way than by reflection are not planets.

3. Dimaris.

Some of the inhabitants of the sea have antennæ and horny jointed legs; but all animals of this description are insects: Therefore some insects are inhabitants of the sea.

4. Fesapo.

No vice is to be admitted as a species of relaxation suited to a Christian; Every species of relaxation suited to a Christian consists of a cessation from ordinary occupations: Therefore some cessation from ordinary occupations is not vice.

5. FRESISON.

No fallacious argument is a legitimate mode of persuasion; Some legitimate modes of persuasion fail of producing acquiescence: Therefore some arguments which fail of producing acquiescence are not fallacious arguments.

6. AEO.

All dogs are quadrupeds; but no quadrupeds are fishes: Therefore some fishes are not (*rather*, no fishes are) dogs.

Barbara, *Celarent*, *Darii*, *Ferioque*, prioris:
Cesare, *Camestres*, *Festino*, *Baroko*, secundæ:
Tertia, *Darapti*, *Disamis*, *Datisi*, *Felapton*,
Bokardo, *Ferison*, habet: Quarta insuper addit
Bramantip, *Camenes*, *Dimaris*, *Fesapo*, *Fresison*:
Quinque *Subalterni*, totidem *Generalibus* orti,
Nomen habent nullum, nec, si *bene colligis*, usum.

These lines serve as a *memoria technica*, to fix on the mind without much trouble the various forms of correct argument, and with them, the rules which follow on the subject of *reduction* of syllogisms. The examples of those modes in which a subalternate conclusion is given instead of an universal are sufficient to shew their inutility. See also the observations on the eighth rule of structure, page 166, 167.

§. 6. *De Modorum Demonstratione.*

ATQUE omnes quidem 24 eatenus concludere, quod in iis convenientia vel dissidium extremorum certo atque necessario colligatur, ex Principiis Syllogisticis abunde constat.

For it has been before observed, that every syllogism by which an affirmative conclusion is established is an application of the first canon or general principle; (p. 143.) and that every syllogism in which a negative conclusion is inferred is an application of the second canon. (p. 144.)

Quod *optime demonstrat* Aristoteles ad hunc modum.

Statuit primo Theorema, quod Scholastici vocant *Dictum de Omni et Nullo;* scil. "Quod "prædicatur Universaliter de alio, (i. e. de ter- "mino distributo,) sive affirmative, sive nega- "tive, prædicatur similiter de omnibus sub eo "contentis."

Admisso hoc Theoremate (quod *axioma* sponte perspicuum est) constat una, modos quatuor priores in primâ certo atque necessario concludere. Nam eorum major ostendit *majus extremum* prædicari *de medio distributo;* et minor, *minus extremum* sub *medio contineri.*

The first figure consists in the application of some

general principle to a subordinate case. It is, for instance, a general principle in which most persons will acquiesce, that, *No system which is impracticable in a large community is intended to be of universal obligation.* But, the system of *community of goods* is an especial case subordinate to the subject laid down, namely, *Systems impracticable in a large community.* The original principle will therefore be correctly applied to it; namely, *Community of goods is not a system intended to be of universal obligation.*

The fundamental axiom of the first figure is usually thus expressed: "Whatever may be either "affirmatively or negatively predicated of any uni-"versal or distributed term, may be predicated in "the same manner (that is, affirmed or denied re-"spectively) concerning every thing comprehended "under that term."

Thus if the quality or attribute implied by the word *habits* is affirmed of *all virtues* universally; and if *prudence*, or *justice*, or *benevolence*, or *patience*, or *temperance*, is comprehended under the term *virtue;* then *habits* may also be affirmatively predicated of each of these. The syllogism therefore will be in this form;

All virtues are habits;

Prudence [or, *justice*, or *benevolence*, or *patience*, or *temperance*] *is a virtue:*

Therefore prudence [or *justice*, or *benevolence*, or *patience*, or *temperance*] *is a habit.*

Again, in the following syllogism,

Quod bonum, id certe utile;
Quod honestum, id bonum; Ergo
Quidquid honestum, id utile:

The majo extreme *utile* is, in the major premiss, predicated universally and affirmatively of *bonum;* but the minor term *honestum* is declared in the minor premiss to be comprehended under *bonum:*

therefore *utile* is predicated in the same manner, that is, affirmatively, of *honestum;* in other words, it is inferred that *quidquid honestum est, id utile.*

Quod contra naturam est, id non est utile:
Hominem hominis incommodo suum augere commodum est contra naturam:
Ergo, hominem hominis incommodo suum augere commodum non est utile.

The major extreme, *utile*, is, as stated in the major premiss, predicated universally, negatively, of *quod contra naturam est*, which is the middle term; but the minor extreme, *hominem hominis incommodo suum augere commodum*, is stated in its premiss to be comprised under that middle term: therefore the major extreme is predicated negatively concerning the minor extreme.

It is obvious that the *major* premiss in this figure, inasmuch as it lays down a general principle, must be an *universal* proposition; and that the *minor*, since its office is to assert the subordination of the minor term to the middle term, must be *affirmative.*

Quare, Modi quatuor prædicti nihilo penitus indigent quo *necessitas* conclusionis appareat, præter ea quæ in præmissis posita sunt: et proinde quatuor illi sunt *præ cæteris evidentes.* Nam cæteri omnes aliquo vel aliquibus egent, quæ, utcunque per præmissas necessaria, in Syllogismo tamen *non exprimuntur.* Quare illos Aristoteles *perfectos*, hos *imperfectos* dicit; Scholastici *directos*, et *indirectos* vocant: quia per illos ad conclusionem, velut ad scopum,

recta itur; per reliquos eodem perveniri potest, prius tamen alio deflectendum est.

The illative force of syllogisms in the first four modes of the first figure has been already shewn. But every correct argument in the other figures may be reduced to an equivalent syllogism in some one of these modes, by changing one or both of the premises into others of the same signification, so that the pair of premises thus obtained shall involve the principle of the first figure. For instance, the following is a syllogism in the second figure:

No birds are viviparous animals;
Bats are viviparous animals; therefore,
Bats are not birds.

But by substituting for the major premiss its simple converse, (which is necessarily implied in it,) the same argument may be thus expressed in the first figure:

No viviparous animals are birds;
Bats are viviparous animals; therefore
Bats are not birds.

Again, it may be argued in the third figure, that,

No dishonest measures are really expedient;
But some dishonest measures bear the appearance of expediency;
Therefore some measures which bear the appearance of expediency are not really expedient.

To which the following syllogism in the first figure is equivalent; being deduced from it only by the simple conversion of the minor premiss:

No dishonest measures are really expedient;
But some measures which bear the appearance of expediency are dishonest;
Therefore some measures which bear the appearance of expediency are not really expedient.

This process is denominated *Reduction.* It is usually applied to the purpose of demonstrating the correctness of the *consequence* (that is, the real dependence of the conclusion on the premises) in the modes of the three latter figures. And the evidence which is thus afforded is undoubtedly satisfactory.

It is not however the only or the primary evidence of the correctness of these modes. Much less can it be supposed that they are in themselves less accurate forms of argument than those in the first figure; or that their conclusions are authorized only because they imply certain corresponding forms in that figure: although this erroneous apprehension has given occasion to the names *imperfect, indirect,* and *inevident,* by which they are usually distinguished. If indeed such a distinction were founded on truth, the first figure would always be the most natural form of an argument, which is not the case. The following argument, for instance, is in the second figure, in *Camestres;* a form of very frequent use; *The real culprit has a deep scar on his left cheek; but the prisoner at the bar has no such mark, and therefore is not the real culprit.* But it can scarcely be supposed to owe its correctness to the fact that its premises imply either of the following syllogisms, in the first figure:

No man who has a deep scar on his left cheek is the prisoner at the bar;
But the real culprit has a deep scar on his left cheek;
Therefore the real culprit is not the prisoner at the bar;

which conclusion implies its converse,

Therefore the prisoner at the bar is not the real culprit.

Or thus:

None but a man who has a deep scar on his left cheek is the real culprit;

The prisoner at the bar has no deep scar on his left cheek;
The prisoner at the bar is not the real culprit.

Common sense will at once suggest which is the more *direct* and *evident* mode of reasoning.

In fact, each figure consists in the application of a distinct and independent axiom or general principle.

The principle of the FIRST FIGURE has been already stated.

The principle of the SECOND FIGURE is this: "Whatever universally *comprehends* any quality "differs from every thing which *excludes* that "quality; and, whatever universally *excludes* a "quality, differs from every thing which *comprehends* "the same quality." Or it may be thus stated: "If any quality is universally predicable concern-"ing any thing or class of things, whatever *does* "*not possess* that quality is excluded from that "thing or class: and if a quality is universally "denied concerning any thing or class, whatever "*possesses* that quality must also be excluded from "the same."

Thus, in the premises, *All real nettles are provided with stinging bristles; but the plant called dead-nettle is not provided with stinging bristles;* it is asserted that a certain quality (namely, the *being provided with stinging bristles*) universally distinguishes *real nettles*, but does not belong to *the plant called dead-nettle.* The inference is that these differ from each other; that is, *The plant called dead-nettle is not the real nettle.*

Again, the premises, *Real nettles have no blossom, but the plant called dead-nettle has blossoms,* shew, that because *real nettles* universally exclude the quality of *having blossoms*, which quality is possessed

by *dead-nettles*, these classes differ from each other. The conclusion therefore is that *the plant called dead-nettle is not the real nettle.*

Again, if the quality of *making good use of the knowledge acquired* is universally characteristic of *wise men*; and if there are *learned men* who do *not* possess the quality of *making good use of their acquired knowledge*; then those *learned men* destitute of that quality must be excluded from the whole class of the *wise*. Hence the argument, *All wise men make good use of the knowledge they have acquired; but some learned men do not so; therefore some learned men are not wise.*

This principle can only prove disagreement of the extremes: and therefore the second figure admits of none but *negative conclusions*; and requires a *negative premiss*. The *major premiss* must also denote the *entire* comprehension or exclusion of the quality adduced; that is, it must be *universal.*

The principle of the THIRD FIGURE is this: "If "two qualities co-exist in the same subject, (being "predicated of the same class, or portion of a class, "or individual,) it is thereby proved that they *may* "agree with each other. Or, if one is excluded "from, and the other exists in, the same subject, it "follows that they *may differ* from each other." The former case proves the qualities in question to be *compatible* with each other; the latter proves them to be *separable* from each other. Hence the *conclusions* founded on this axiom are necessarily *particular*. And when the conclusion is negative, the major premiss (and not the minor) must be negative; because the major term is denied of a portion of the minor term; so that the *minor premiss* must uniformly be *affirmative.*

If, for example, the two qualities, *responsibility* and *mortality*, are affirmed to co-exist in the subject, *man*, (as expressed by the premises, *All men*

are responsible; but all men are mortal;) then it must follow that, *Some mortal beings are responsible:* that is, *mortality* and *responsibility* are *compatible* with each other.

Again; if, of the two qualities, *virtue* and *responsibility*, the former is excluded from *some men*, and the latter belongs to the same *some men*, (which must be the case if it belongs to *all men*,) then the quality of *virtue* is *separable* from that of *responsibility:* that is, if *some men are not virtuous*, and yet *all men are responsible*, it follows that *some responsible beings are not virtuous.*

This figure frequently admits of a singular noun or an accumulation of singular nouns for the term of comparison: as, *Elijah was translated from earth without experiencing death; yet Elijah was a mere man; therefore a mere man may be translated from earth without experiencing death.* Again, *Meekness is compatible with fearlessness; for they were combined in the character of the great example of perfection.* Again; *Even infidels have acknowledged the purity of the moral precepts of Scripture; for Voltaire, Rousseau, and Hume have made such acknowledgment, and they are well known to have been infidels.*

The principles of the FOURTH FIGURE are these: "If a class of things, or a part of a class, "is comprehended in another class, and this in a "third; then the first class must comprehend some "individuals belonging to the third." Again, "if "one class universally excludes another, which is "wholly or partially comprehended under a third, "the first is partially excluded from the third." And vice-versâ, "if one class is universally com- "prehended under another, from which a third is "wholly excluded, this third is wholly excluded "from the first."

The first branch of this rule applies to the modes

Bramantip and *Dimaris:* the second to *Fesapo* and *Fresison;* and the third to *Camenes*. The terms of the rule shew that this figure admits of no negative premiss unless it be universal, and of no universal conclusion unless it be negative. They shew also that this figure is of little if any practical use.

Perfici igitur et *revocari* atque *reduci* dicimus indirectos, cum per modum aliquem directum illationis suæ vim demonstrant. Et definitur *Reductio*, imperfecti modi in perfectum mutatio, quo necessitas illationis fiat ex inevidenti evidens. Fiet autem, quando evidenter (h. e. in primâ) ostenditur conclusionem vi præmissarum vel 1. talem esse; vel 2. aliam esse non posse. Unde Reductio est vel *ostensiva* vel *ad impossibile*.

Reduction is properly defined, "The change of a "syllogism in one figure into an equivalent syllo-"gism in another figure."

But that branch of reduction which is employed to demonstrate the validity of the argument in the latter three figures by an appeal to the principle of the first figure is defined, as above, "The chang-"ing an indirect mode into a direct mode, for the "purpose of rendering evident the necessity of its "inference."

1. This reduction is *ostensive* or *direct* when the new premises in the first figure authorize either the identical conclusion of the original syllogism, or a conclusion from which the original conclusion can be legitimately inferred by conversion.

2. The reduction is *indirect* or *ad impossibile* when the correctness of the conclusion is proved by tracing the contradiction and absurdity which would necessarily follow its denial.

Utriusque praxin pro modis nominatis docent ipsa modorum nomina a scholasticis in hunc finem conficta. Nam in iis tres vocales sunt totidem propositiones syllogismi suâ quantitate et qualitate signatæ. Consonæ initiales B. C. D. F. notant modum primæ, ad quem fit reductio. S. P. propositionem, quam vocalis proxime antecedens designat, esse in reductione convertendam: S simpliciter; P per accidens. M transponendas esse præmissas. K reductionem fieri vel per impossibile, i. e. pro præmissâ, cujus symbolo adhæret, sumendam esse conclusionis contradictoriam; vel *ostensivam* esse, i. e. ipsam præmissam convertendam esse per Negationem: sed ut hoc rite fiat, necesse est pro Baroko substituas Fakoro, Dokamos pro Bokardo. Quibus ex præscripto factis, colligitur in primâ conclusio vel expositæ eadem, vel eam inferens, vel præmissæ contradictoria, ut in exemplo.

c*E*s	Nullum	A	est	B
A*r*	Omne	C	est	B : *Ergo*
E	Nullum	C	est	A.

		ad			
*c*E	Nullum	B	est	A	
*l*A	Omne	C	est	B :	*Ergo*
*r*E*nt*	Nullum	C	est	A.	
*d*I*s*	Aliquod	B	est	A	
A*m*	Omne	B	est	C :	*Ergo*
I*s*	Aliquod	C	est	A.	
		ad			
*d*A	Omne	B	est	C	
*r*I	Aliquod	A	est	B :	*Ergo*
I	Aliquod	A	est	C.	
*b*A*r*	Omne	A	est	B	
O*k*	Aliquod	C	non est	B :	*Ergo*
O	Aliquod	C	non est	A.	
		ad			
*b*A*r*	Omne	A	est	B	
*b*A	Omne	C	est	A :	*Ergo*
*r*A	Omne	C	est	B.	
*d*O*k*	Aliquod	B	non est	A	
A*m*	Omne	B	est	C :	*Ergo*
O*s*	Aliquod	C	non est	A.	
		ad			
*d*A*r*	Omne	B	est	C	
I	Aliquod	non-A	est	B :	*Ergo*
I	Aliquod	non-A	est	C,	

§. 7. *De Reductionis validitate.*

REDUCTIONIS ostensivæ validitas sic ostenditur. Ex præmissis reducendi, per conversionem imperatam, necessario colliguntur præmissæ reducti: atque ex iis, per figuram primam, conclusio reducti: quæ vel *ipsa conclusio* reducendi erit, vel *per illativam conversionem fiet.*

In ostensive reduction, the significant consonants attached to the vowels which symbolize the *premises* imply directions to make the requisite changes. The new premises being thus obtained, the conclusion is to be deduced immediately from them. The comparison of this new conclusion with that of the original syllogism affords the required evidence of validity. When no significant consonant is subjoined to the symbol of the conclusion, (as in *Cesare*, *Felapton*,) the two conclusions are the same. But when *s* or *p* follow the final vowel, the new conclusion will be found reducible to the original conclusion by simple or accidental conversion.

For example:

cEs *The fixed stars do not revolve about a centre*;
A *The planets revolve about a centre: Therefore*,
rE *The planets are not fixed stars.*

To illustrate the correctness of this method of reasoning, let the premises be so arranged, or changed for others equivalent to them, as to reduce them into the first figure. This will be effected by the simple conversion of the major premiss, as intimated by the *s* annexed to its symbol. The new

premises, as the initial c denotes, will be in the mode *Celarent*: thus,

No heavenly bodies which revolve about a centre are fixed stars; All planets are heavenly bodies which revolve about a centre: from which premises the conclusion must be, *The planets are not fixed stars.*

Again;

*d*A *Every modification of pride is sinful;*
*t*I*s* *Some modifications of pride are approved and encouraged by the majority of mankind.*
I *Some things approved and encouraged by the majority of mankind are sinful.*

In the name *Datisi*, the letter *t* has no symbolic meaning. The argument is thus reduced to *Darii* by the simple conversion of the minor premiss:

Every modification of pride is sinful; Some things approved by the majority of mankind are modifications of pride: Therefore some things approved by the majority of mankind are sinful.

Again, let the following syllogism be given:

*f*E *Polished brass is not gold;*
*l*A*p* *Polished brass glitters:*
*t*O*n* *Not-all that glitters is gold.*

Here, the letters *l*, *t*, *n*, are not symbolic. *P* denotes the conversion *per accidens* of the minor premiss, to the symbol of which it is annexed. This single change reduces the premiss into the mode *Ferio*: thus; *Polished brass is not gold; but some things which glitter are polished brass.* And the evident conclusion is the same; *Some things which glitter are not gold.*

Again;

*fr*E*s* *Reason is not instinct;*
I*s* *Instinct is a kind of natural sagacity:*
O*n* *Some kind of natural sagacity is not reason.*

Thus reduced to *Ferio:*

Instinct is not reason; Some kind of natural sagacity is instinct: Therefore some kind of natural sagacity is not reason.

Again;

dIs *Some acts of friendship militate against justice;*

Am *All acts of friendship appear virtuous and splendid to the thoughtless: Therefore,*

Is *Some things which appear virtuous and splendid to the thoughtless militate against justice.*

The significative consonants which affect these premises are *s* and *m*. The latter teaches that the premises are to be transposed. The former shews that the simple converse of the major premiss is to constitute the new minor premiss. These changes produce the following premises in the first figure in *Darii:*

All acts of friendship appear virtuous and splendid to the thoughtless: Some acts which militate against justice are acts of friendship. From these new premises the direct conclusion is, *Some acts which militate against justice appear virtuous and splendid to the thoughtless.* Of which the original conclusion is the simple converse; as the final *s* in *Disamis* intimated. Thus that conclusion and the mode in which it is drawn are shewn to be valid.

Again;

cAm *The passions are common to brutes;*

Es *The virtues are not common to brutes:*

trEs *The virtues are not passions.*

Thus reduced to *Celarent:*

No qualities common to brutes are virtues; The passions are qualities common to brutes: Therefore the passions are not virtues.

Again;

brAm *Worldly honours are transient vanities;*
An *Transient vanities are sources of certain disappointment: Therefore*
tIp *Some sources of certain disappointment are worldly honours.*

The transposition of the premises produces the following new antecedent, in *Barbara:*

All transient vanities are sources of certain disappointment; Worldly honours are transient vanities. The conclusion from which premises is; *Worldly honours are sources of certain disappointment:* of which the original conclusion is the converse *per accidens;* and is therefore implied in it.

Another method of *ostensive reduction*, namely, by *negative* or *contrapository conversion*, is applicable to the two modes *Baroko* and *Bokardo.* It is accomplished by substituting for the major premiss its *negative converse;* to which, in Bokardo, must be added the transposition of the premises. This process may be symbolized by the names *Fakoro*, instead of Baroko; and *Dokamos*, instead of Bokardo.

Let the following be a syllogism in *Baroko:* (that is, *Fakoro:*)

Profitable property will produce an income more than sufficient to replace the expenses attendant on it; But some coal-mines will not produce such an income: Therefore some coal-mines are not profitable property.

By converting the major premiss by *contraposition*, the minor premiss is rendered affirmative, (the negative particle being combined with the predicate,) and the new syllogism is in *Ferio.* Thus: *Whatsoever will not produce an income more than sufficient to replace the expenses attendant on it is not profitable property; But some coal-mines will not produce such an income: Therefore some coal-mines are not profitable property.*

Again, let the following syllogism in *Bokardo*, that is, *Dokamos*, be given to be reduced.

Some acts of injustice are not cognizable by human laws;

All acts of injustice are social evils;

Therefore some social evils are not cognizable by human laws.

By converting the major premiss *by contraposition*, and transposing the premises, a syllogism is formed in *Darii;* thus,

All acts of injustice are social evils;

Some practices not cognizable by human laws are acts of injustice.

From which premises flows the conclusion,

Therefore some practices not cognizable by human laws are social evils.

The conclusion from the original premises is the simple converse of this new conclusion, and consequently inferible from it.

The latter process may be more simply described thus. By combining the negative with the major extreme the syllogism is reduced to *Disamis*, and the reduction to the first figure may be performed according to the directions given for that mode.

The mode *Camestres* may also be conveniently reduced by the *negative conversion* of its *major* premiss: the minor premiss becoming affirmative by the combination of the particle with the predicate. For example,

Whatever is unchangeable is free from imperfection;

No human institutions are free from imperfection:

No human institutions are unchangeable.

Which by contrapository reduction will stand thus:

Whatever is not free from imperfection is not unchangeable;

Human institutions are not free from imperfection:

Human institutions are not unchangeable.

Reductionis per Impossibile validitas sic ostenditur. Quoniam præmissæ *ex hypothesi* sunt semper veræ, ergo contradictoria præmissæ nunquam vera: ergo Reducti conclusio falsa: recte autem in Barbara colligitur ex præmissis, quarum igitur una, i. e. *nova*, falsa erit; quæ quidem est *Expositæ* conclusionis contradictoria; ergo *Exposita* conclusio vera.

The argument *ab impossibili* consists in the hypothetical concession of the falsehood of that which is the subject of discussion, and in the tracing of such concession to its consequences, so as to shew that it necessarily involves some manifest absurdity or impossibility. As truth cannot be either absurd or impossible, it follows that the thing conceded is not true; and consequently the dependence of the proposition contended for on the premises from which it has been deduced is incontrovertible.

When therefore this method of reasoning is applied to the reduction of Syllogisms, the following process is adopted. The proposition to be established is that the conclusion deduced by a certain mode of syllogism is valid; that is, is necessarily true provided the premises be true. To prove this, it is *pro tempore* conceded, that although the premises are true, yet the conclusion is false. And from this concession it is shewn, by the change directed in each case, that one of the premises must unavoidably be false: and consequently that the objector, if consistent, must be guilty of the absurdity of believing the same thing to be at once both true and false.

This kind of reduction is employed only in those two modes in which one premiss is *particular negative;* namely, *Baroko* and *Bokardo*. And the

technical method consists in substituting the contradictory of the conclusion for the particular negative premiss, as is denoted by the symbol *k* attached to it. For example,

bA *The contented are happy;*
rOk *Some men are not happy:*
O *Some men are not contented.*

In the place of the minor premiss, to which the symbol *k* is attached, substitute the contradictory of the conclusion: the new premises will then be, in *Barbara*,

The contented are happy;
All men are contented:

whence is deduced the direct conclusion, *All men are happy.*

Now the original premises are (by hypothesis) true; therefore the contradictory of either of them is false: but the new conclusion is the contradictory of the original minor premiss: therefore that new conclusion is false. That conclusion, however, is correctly inferred from the premises in *Barbara*. Therefore one of those premises is false: this cannot be the major premiss, (which is the same as the original major, and has been granted to be true:) therefore the minor premiss is false: therefore its contradictory is true. But its contradictory is the original conclusion: therefore the original conclusion is true, and correctly inferred from the premises.

Again:

bOk *Some legal coins possess no intrinsic value;*
Ar *All legal coins have an adventitious value:*
dO *Some things which have an adventitious value possess no intrinsic value.*

By adopting the contradictory of this conclusion for a major premiss, and retaining the minor premiss, the following syllogism will be produced in *Barbara*.

All things which have an adventitious value possess also an intrinsic value;
All legal coins have an adventitious value:
All legal coins possess an intrinsic value.

But this conclusion is false, for it contradicts the original premiss: therefore the new major premiss is false: therefore its contradictory, which is the original conclusion, is true.

The reduction *ad impossibile* may be entirely superseded by the use of the method of *conversion by negation* above described.

§. 8. *Figurarum Regulæ speciales.*

PERSPICUUM est ex antedictis

I. Syllogismos simplices, certo atque necessario concludentes, fieri 24 modis: 6 in qualibet figurâ.

These twenty-four modes are all equally correct and undeniable as to the necessary connexion between the conclusion and the premises. Yet they differ much as to their degrees of utility: several of them being such as no person in the usual course of argument would be likely to employ.

Adverte tamen quod imperite disputantis est afferre modum *innominem:* ponet enim in præmissis plusquam opus est ad conclusionem. Quare et innomines hactenus sunt incensi; quamvis negari nequeant, sicubi per inscitiam adhibentur.

See the observations concerning particular conclusions from universal premises, on page 166.

II. Et in aliquo istorum modorum probari posse conclusionem quamlibet de inesse: nempe A uno modo, E quatuor, I septem, O duodecim. Et rursus; in primâ, conclusionem *quamcunque:* In secundâ, omnes et solas *negativas:* In tertiâ, omnes et solas *particulares:* In quartâ, *quamlibet præter* A. De præmissis denique, quod in primâ et secundâ, major semper universalis est: in primâ et tertiâ, minor affirmativa: In secundâ, præmissarum altera negativa: aliaque ejusmodi; quæ ipsa modorum nomina satis indicant.

An *universal affirmative* conclusion can be deduced only from two universal affirmative premises, in the first figure, in the mode *Barbara.*

Universal negative conclusions may be proved by the first figure, in *Celarent;* by the second figure, in *Cesare* and *Camestres;* and by the fourth figure, in *Camenes.*

Particular affirmative conclusions may be proved, in fig. 1. by *Darii* and AAI; in fig. 3. by *Darapti, Disamis,* and *Datisi;* in fig. 4. by *Bramantip* and *Dimaris.*

Particular negative conclusions may be proved by each of the figures: namely, in *Ferio,* of the first figure; *Festino, Baroko,* in the second figure; *Felapton, Bokardo,* and *Ferison,* of the third; *Fesapo,* and *Fresison,* of the fourth figure; together with the subalternates of the four modes by which universal negatives are proved.

The following table represents the propositions, according to their quantity and essential quality, which are admissible in each figure.

Fig.	*Major Premiss.*	*Minor Premiss.*	*Conclusion.*
1.	Universal.	Affirmative.	Any.
2.	Universal.*	Any.	Negative.
3.	Any.	Affirmative.	Particular.
4.	Any but O.	Any but O.	Any but A.

* In the second figure, one of the premises must be negative.

These special rules have already been shewn (p. 187, and 190—193.) to flow immediately from the *general principles*, on which the figures depend.

But they may also be established by the following *technical analysis* of each figure.

FIRST FIGURE,

A, E.	MED.......*Maj.*
A, I.	*Min.*.........MED.
A, I, E, O.	*Min.*.........*Maj.*

Rule 1. *The Minor Premiss must be affirmative.*

For if otherwise, let it be negative: then the major premiss must be affirmative; and the conclusion must be negative. The affirmative major does not distribute the predicate, which must, by the figure, be the major extreme. But the conclusion, being negative, distributes that major extreme. Therefore the process of this extreme is illicit. Therefore the minor premiss must not be negative: that is, *it must be affirmative.*

Rule 2. *The Major Premiss of the first figure must be universal.*

For the minor premiss must be affirmative: therefore the middle term, which is its predicate, is not distributed. Therefore it must be distributed

in the major premiss, in which, by the figure, it is the subject. But universals alone distribute their subject. Therefore *the Major Premiss must be universal.*

SECOND FIGURE.

A ; E.	*Maj.* . . . . MED.
E, O ; A, I ;	*Min.* . . . . MED.
E ; O.	*Min.* . . . . *Maj.*

Rule 1. *One of the premises in the second figure must be negative.*

For the figure requires that the middle term be the predicate of both the premises. But if both are affirmative, the middle term is not once distributed: for negatives alone distribute the predicate. Therefore *one of the premises must be negative.*

Rule 2. *The Conclusion in the second figure must be negative.* Because one of the premises must be negative.

Rule 3. *The Major Premiss in the second figure must be universal.*

For, the conclusion being negative, the major extreme is distributed. It must therefore be distributed in the major premiss; in which it is the subject. But universals alone distribute the subject: Therefore *the major premiss must be universal.*

THIRD FIGURE.

A, E, I, O.	MED. . . . . *Maj.*
A, I.	MED. . . . . *Min.*
I, O.	*Min.* . . . . *Maj.*

Rule 1. *The Minor Premiss must be affirmative.*

For, if it were negative, the major premiss must be affirmative, and consequently would not distribute its predicate, which is the major extreme. But the conclusion, being negative, would require the distribution of that extreme. Therefore the process would be incorrect. Therefore *the minor premiss must be affirmative.*

Rule 2. *The Conclusion of the third figure must be particular.*

For the minor premiss (which must be affirmative) does not distribute the predicate, which, by the figure, is the minor extreme. Therefore the minor extreme cannot be distributed in the conclusion. But particulars alone have the subject undistributed. Therefore *the conclusion must be particular.*

FOURTH FIGURE.

A, E, I.	*Maj.* . . . . MED.
A, E, I.	MED. . . . *Min.*
E, I, O.	*Min.* . . . . *Maj.*

Rule 1. *A particular negative premiss is inadmissible.*

(1.) If the *major* premiss be particular negative, the major extreme, being its subject, is not distributed. But the conclusion must be particular negative, in which the major extreme must be distributed. Therefore an illicit process occurs. Therefore the *major premiss may not be particular negative.*

(2.) If the *minor* premiss be particular negative, the middle term, which is the subject, is not distributed. But the major premiss must be universal affirmative. Therefore the medium, which is the predicate, is again undistributed. Therefore *the minor premiss may not be particular negative.*

Rule 2. *An universal affirmative conclusion cannot be proved in the fourth figure.*

For such a conclusion can be deduced only from universal affirmative premises. But the minor extreme is, by the figure, the predicate of its premiss. Therefore it is not distributed. Therefore it cannot be distributed in the conclusion. Therefore *the conclusion cannot be universal affirmative.*

The subsequent examples exhibit errors against each of these rules.

I. 1. *Self-denying acts of virtue are followed by an inward satisfaction; but the exercise of gratitude is not a self-denying act of virtue; and consequently is not followed by any inward satisfaction.*

Air is essential to the support of human life; but the light of the sun is not air: therefore the light of the sun is not essential to the support of human life.

2. *Some of the ancient Greeks had confessedly a much higher relish for all the beauties of oratory than the moderns. But among the ancient Greeks are to be reckoned the Lacedæmonians; these therefore had a higher relish than the moderns for the beauties of oratory.*

Some animals have been discovered imbedded in stone, in which they must apparently have existed since the deluge; but all elephants are animals; therefore some elephants have been found imbedded in stone apparently from the time of the deluge.

II. 1, 2. *Whatsoever is better than strength is peculiarly characteristic of man as distinguished from the brute creation: reason, for instance, is peculiarly characteristic of man in that preeminent point of view: reason, therefore, is better than strength.*

The electric fluid is a very subtle penetrating substance: the galvanic fluid is also a very subtle penetrating substance: therefore the galvanic fluid is the same as the electric fluid.

3. *Some implements of husbandry are of modern invention; but ploughs are not of modern invention: therefore some ploughs are not implements of husbandry.*

Some vegetable substances are specifically lighter than water; but no metals are specifically lighter than water; therefore some metals are not vegetable substances.

III. 1. *The Epicureans thought that the universe was created by the casual concurrence of atoms. But the Epicureans were not Peripatetics: The Peripatetics therefore did not hold that doctrine.*

2. *If it cannot be denied that every act of virtue is beneficial to society; and is at the same time an act advantageous to the individual who performs it: must it not follow that whatever act is advantageous to the agent is likewise beneficial to society?*

IV. 1. *Some men of great abilities have not enjoyed a liberal education. All however who have received a liberal education are responsible for their advantages. Therefore it would appear that some who are thus responsible are not men of great abilities.*

All who overrate their own abilities are proud, but some proud persons are not men of literature, therefore some men of literature do not overrate their own abilities.

2. *Whatever is at once great, uncommon, and beautiful, tends to enlarge the mind, to gratify curiosity, and to diffuse throughout the soul a delightful feeling of satisfaction and enjoyment. But whatever has such tendencies as these affords pleasure to the imagination. All those objects therefore which afford pleasure to the imagination are at once great, and uncommon, and beautiful.*

The following table presents at one view the special rules of the figures, with their respective proofs, concisely stated.

Fig.	*Rules.*	*Proofs.*
1.	Minor premiss affirmative	Else illicit process of the major term.
	Major premiss universal	Else the middle term not distributed.
2.	One premiss negative	Else the middle term not distributed.
	Conclusion negative	Because a negative premiss.
	Major premiss universal	Else illicit process of major term.
3.	Minor premiss affirmative	Else illicit process of major term.
	Conclusion particular	Else illicit process of minor term.
4.	Major premiss not particular negative .	Else illicit process of major term.
	Minor premiss not particular negative .	Else the middle term not distributed.
	Conclusion not universal affirmative .	Else illicit process of minor term.

An acquaintance with these rules simplifies the method of scrutinizing an argument. When a syllogism is reduced to form, it becomes easy, by comparing it with the special rules of the figure to which it belongs, to decide whether the conclusion has a real dependence on the premises, and is legitimately deduced from it. The occasional exercise of thus analyzing a good parliamentary debate, or a judicial speech, would tend to produce a tact and readiness in discerning the force and cogency of an argument, and a perspicuity free however from the technicality of formal syllogism in expressing a train of reasoning. The promiscuous syllogisms given at the close of the Appendix will serve as a more simple exercise of the same nature.

Atque hinc facile colligitur, inspecto schemate modorum, quali medio probanda sit quæstio omnis de inesse. E. g. Quæstio A probatur in *Barbara;* medio, de quo prædicatum quæstionis universaliter affirmatur, quodque de subjecto quæstionis affirmatur itidem universaliter: et sic de cæteris.

Thus, a *particular affirmative proposition* may be proved, either by a middle term wholly comprehended under the predicate and partially comprehending the subject, as in *Darii:* or by a middle term representing a class or individual of which both extremes are qualities, as in *Darapti, Disamis,* and *Datisi:* or by a middle term comprehending the predicate and comprehended by that class of which the subject represents a portion, as in *Bramantip* and *Dimaris.*

Again, to prove a *particular negative* proposition, any one of the four principles on which the figures are respectively founded may be employed.

Adverte, quod figura quarta tribus cæteris deterior est: cum aliis de causis, tum ex hoc præsertim, quod medium dicat de majori, hunc de minori, minorem de medio, h. e. *medium* nugatorie *de seipso*.

*br*A*m*	Omne	A	est	B
A*n*	Omne	B	est	C: *Ergo*
*t*I*p*	Aliquod	C	est	A.

i. e.

Omne	A	est	B: *Major.*
Aliquod	C	est	A: *Conclusio.*
Omne	B	est	C: *Minor.*

B ergo prædicatur de B.

For instance:

All metaphysical enquiries are involved in some degree of obscurity:

But all things involved in obscurity are liable to much error:

Therefore some things liable to error are metaphysical enquiries.

This syllogism predicates the medium *involved in obscurity* of the major term *metaphysical enquiries;* this is predicated (in the conclusion) of the minor term, *things liable to error:* and this minor term is predicated (in the minor premiss) of the medium

involved in obscurity. That is, the class or aggregate denoted by the term, *things involved in obscurity*, is represented to comprehend all *metaphysical enquiries*; the term *metaphysical enquiries* is asserted to comprehend *some things liable to error*; and *some things liable to error* are represented to comprehend *every thing that is involved in obscurity*. Thus it is implied, in a circle, that the middle term, *things involved in obscurity*, comprehends *things involved in obscurity*; which is nugatory.

The same observation applies also to each of the *extremes:* Thus, by tracing the terms in a retrograde order, we find it asserted that the major extreme, *metaphysical enquiries*, is predicated of the minor extreme, *things liable to error;* this is predicated of the middle term, *things involved in obscurity;* and this again of the major extreme, *metaphysical enquiries:* that is, the major extreme is nugatorily predicated of itself.

The fourth figure is indeed useless; and is introduced only for the sake of displaying all the possible modes of syllogistic argument. It is probable that it has seldom, if ever, been employed in the course of real argument; and the mind seems to revolt from every example of it which is adduced even for the purpose of illustration.

The first figure is sometimes made to assume the appearance of the fourth by the transposition of its premises: a transposition which is strongly urged by some as the proper order. Their chief argument however is derived from an inaccurate conception of the nature of the *middle* term. Overlooking its connexion with the extremes, and thus neglecting to advert to the meaning of the word *medium* as bearing reference to its correlates *major* and *minor*, (as illustrated under the first rule of structure, page 146.) they take the word only in a mechanical sense,

as implying that it occupies the middle place. They would therefore argue thus:

A child bearing testimony in its father's cause is an interested witness: but interested witnesses are not admissible in courts of justice: therefore a child bearing testimony in its father's cause is not admissible in courts of justice.

But such an arrangement is obviously unphilosophical. Whereas the statement in the first place of the broad incontrovertible principle, *Interested witnesses are not admissible in courts of justice,* prepares the mind for an involuntary acquiescence in the subordinate assertion, that *a child bearing testimony in its father's cause (being an interested witness) is not admissible in courts of justice.*

§ 9. *De Enthymemate, &c.*

SYLLOGISMIS etiam adnumerantur aliæ argumentorum species; quæ nec stricte loquendo Syllogismi sunt, nec ita tamen peccant, ut propterea mereantur excludi: in quibus scilicet reticetur argumenti pars aliqua, sed quam proclive est cogitatione substituere.

1. *Enthymema;* cujus antecedens constat propositione et judicio; nam judicium est propositio in mente; e. g. *Homo est animal; ergo est vivens.* Deest illi ad Syllogismum altera præmissarum; utrum vero major an minor, ex quæstione dignoscitur. Dicitur etiam Aristoteli *Syllogismus Oratorius;* et, si integra

ejus vis contineatur in unicâ propositione, *sententia Enthymematica;* utrumque Quintiliano *sententia cum ratione;* ut, *Mortalis cum sis, immortale ne geras odium.*

1. In an *enthymem*, the conclusion is drawn from two premises, of which only one is expressed. It is, as to form, a defective syllogism, in which the writer or speaker relies on the common sense of his reader or hearer to supply the suppressed premiss. Hence it is said that the *antecedent* consists of a *proposition* and a *judgment:* that is, of one premiss expressed and the other implied.

Every *enthymem* contains the three terms of the syllogism which it represents. One of these terms (namely, one of the extremes of the question) occurs twice; the middle term and the other extreme are each expressed but once. The suppressed premiss is to be supplied by comparing with the middle term that extreme which occurs only once.

For example: *The human soul is immaterial; consequently it is immortal.* Here the conclusion is, *The human soul is immortal.* The minor extreme is, *the human soul;* which term also occurs in the expressed premiss, *The human soul is immaterial.* This is therefore the minor premiss: in which the minor extreme is compared with the middle term *immaterial.* The major extreme is *immortal;* and the suppressed proposition is, *Every thing immaterial is immortal.* The complete syllogism therefore is in *Barbara;* namely,

Every thing immaterial is immortal;
But the human soul is immaterial;
Therefore the human soul is immortal.

It is most frequent, in enthymems, to express the minor premiss; since this is usually more liable than the major premiss to be called in question. The major premiss is usually a proposition of a more general nature, and is therefore supposed to be better known, and less exposed to contradiction or doubt.

For instance: *We enjoy a greater degree of political liberty than any civilized people on earth, and can therefore have no excuse for a seditious disposition.* The major premiss is here understood; *Those who enjoy a greater degree of political liberty than any other civilized people on earth, have no excuse for a seditious disposition.*

The power of ridicule is a dangerous faculty; since it tempts its possessor to find fault unjustly, and to distress some for the gratification of others. This sentence comprehends two enthymems; for there are two middle terms. And the major premises respectively implied in each are, *That which tempts its possessor to find fault unjustly is a dangerous faculty;* and, *That which induces its possessor to distress some for the gratification of others is a dangerous faculty.*

Those only who understand other languages are competent to treat correctly of the principles of their own; since such a competency requires a philosophical view of the nature of language in general. Here the major premiss is suppressed, and the sense of the direct conclusion is more emphatically conveyed by the use of its contrapository or negative converse. The syllogism is in *Barbara:*

All who have a philosophical acquaintance with the general nature of language understand other languages besides their own;

All who are competent to treat correctly of the principles of their own language have a philosophical acquaintance with the general nature of language;

Therefore, all who are competent to treat correctly

of the principles of their own language understand other languages besides their own.

Or by retaining the contrapository form throughout, it may be thus stated, in *Celarent:*

Those who have not a philosophical view of the general nature of language are not competent to treat correctly of the principles of their own;

But those who do not understand other languages have not a philosophical view of the general nature of language;

Therefore, those who do not understand other languages are not competent to treat correctly of the principles of their own.

Or again it may be thus expressed:

Whatever requires a philosophical view of language in general requires an acquaintance with more than one language;

The ability to treat correctly of the principles of our own language requires a philosophical view of language in general;

Therefore, that ability requires an acquaintance with more than one language.

If however it happens that the minor premiss is very obvious; or if it is desirable to give a particular prominence and emphasis to the major premiss, the former is suppressed. For example: *During every protracted war it happens (for whatever throws capital into new channels will produce this effect) that various profitable branches of commerce are carried to a great extent:* that is,

Whatever throws capital into new channels occasions the carrying various profitable branches of commerce to a great extent;

But every protracted war throws capital into new channels:

Therefore, every protracted war occasions the

carrying various profitable branches of commerce to a great extent.

The minor premiss, though essential to the argument, was too well known to the audience to which it was addressed, to require a formal statement.

Ridicule is a dangerous weapon; for such, in fact, is every talent by which a man stirs up a secret enmity against himself. The suppressed premiss is the minor; *Ridicule is a talent by which a man stirs up a secret enmity against himself.*

The enthymematic form is best adapted to the first figure. It is indeed rarely thought necessary to express both the premises in this figure, unless it be for the purpose of adding some explanation or modification, or an incidental argument to confirm them. Thus no one can hesitate to fill up the logical ellipsis, when he reads, *The study of mathematics is essential to a complete course of education, because it induces a habit of close and regular reasoning;* in which the major premiss is omitted: or, *So great is the importance of a habit of close and regular reasoning, that the study of mathematics must be essential to a complete course of education:* in which the minor premiss is omitted. The syllogism is in *Barbara:*

Whatever induces a habit of close and regular reasoning is essential to a complete course of education:

The study of mathematics induces a habit of close and regular reading:

Therefore the study of mathematics is essential to a complete course of education.

In the second figure the enthymem is not so uniformly employed, because it frequently occurs that neither of the premises is more obvious or general than the other. For example, the syllogism,

Involuntary infirmities excite compassion rather

than reprehension: which is by no means the case with vicious habits; these therefore cannot be judged to be involuntary; is a more natural form than the enthymem, *Vicious habits must not be classed among involuntary infirmities, because they do not excite compassion, but rather reprehension.*

The third figure is, for the same reason, still less frequently expressed in a form purely enthymematical. The two premises are however very commonly compressed into one sentence; which gives to the argument the appearance, although not the exact character, of the enthymem. For instance;

A man remarkable for the knowledge of nature and of policy, the wisdom of his maxims, the justness of his reasoning, and the variety, distinctness, and strength of his characters, may want exactness in his diction and be careless in the art of writing; for we find both these qualities united in Lord Clarendon.

Here the last clause represents two premises; *Lord Clarendon wants exactness,* &c.; *Lord Clarendon was a man remarkable for the knowledge of nature,* &c.

Again; *Hard substances may be elastic; for ivory is both hard and elastic.*

A correct enthymem may often appear to contain more than three terms; but this is occasioned merely by the deviation from strict form. For instance;

Whatever is done skilfully appears to be done with ease; and art, when it is once matured to habit, vanishes from observation. We are consequently more powerfully excited to emulation by those who have attained the highest degree of excellence, and whom we can therefore with least reason hope to excel. That is,

Acts performed with the greatest apparent ease are the most powerful excitements to emulation:

But the acts of those who have attained the highest degree of excellence and whom we can with least reason hope to surpass are performed with the greatest apparent ease;

Therefore the acts of such persons are the most powerful excitements to emulation.

2. The usual form of an enthymem is that of a complex causal sentence. But its force is often concentrated into one simple grammatical sentence: which is denominated an *enthymematic sentence.* Thus the single proposition, *The example of Virgil shews that even a great poet may be seduced into some faults by the practice of imitation,* represents the following syllogism in *Darapti.*

Virgil was seduced into faults by imitation;

Virgil was a great poet; Therefore

Some great poet has been seduced into faults by imitation.

Again: *The apparent insufficiency of every individual to his own happiness or safety compels us to seek from one another assistance and support.* This appears at first sight to be no more than a simple proposition. But it involves an argument; it consists in the application of a general principle to a particular case. It is equivalent to,

All beings which are manifestly insufficient to their own happiness or safety are compelled to seek from each other assistance and support: But every individual of the human race is so: Therefore every individual is compelled to seek mutual assistance and support.

Thus Nehemiah's question, *Should such a man as I flee?* involves the following argument: *They who are raised up by Divine Providence to accomplish a great and beneficial undertaking should not be ready to flee from the appearance of danger: but such am I; I ought not therefore to flee.*

Again, the query of the unbelieving Pharisees was an enthymematic sentence: *How can a man that is a sinner do such miracles?* The following syllogism represents the train of thought which suggested that question: *Sinners are not endued from above with the power of working miracles: this man is a sinner: therefore he is not endued with the power of working miracles.* Their minor premiss was false; and therefore, (the *consequence*, or connexion of the conclusion with the antecedent, being correct,) their inference was also false.

Demosthenes very forcibly compresses three arguments into one enthymematic sentence, when, in stirring up his country to espouse the cause of the democratic party in Rhodes against the aristocracy, and their ally the Queen of Caria, he says,

Οὐκ αἰσχρὸν, εἰ ὑμεῖς, ὄντες Ἀθηναῖοι, βάρβαρον ἄνθρωπον, καὶ ταῦτα γυναῖκα, φοβηθήσεσθε;

Two arguments are emphatically contained in the following sentence;

Αἰσχρόν ἐστιν ἄρχειν σε, ἕνα Ἀθηναῖον, Πελοποννησίων καὶ Λακεδαιμονίων. (*Anab.*) Xenophon was *but an individual*, and he was an *Athenian;* this circumstance would render his authority obnoxious to Lacedæmonians; the former would render it equally obnoxious to all accustomed to a popular or mixed government.

The argument from the frailty of human nature is very frequently thus implied in the poets, and other writers. For instance; *Πρᾶγος δ᾽ ἀτίζειν οὐδὲν ἄνθρωπον χρέων.* (*Soph.*) that is, *ἄνθρωπον ὄντα*, or *εἴπερ ἄνθρωπός εἰμι.* Again, *Τὸ γὰρ ἁμαρτάνειν, ἀνθρώπους ὄντας, οὐδὲν οἶμαι θαυμαστόν.* (*Xen.*) *Σὺ οὐκ οἶδας, ἄνθρωπος ἐὼν, κῶς χρὴ τὸ βίβαιον.* (*Herod.*)

The following are examples of enthymems and enthymematic sentences.

Real learning is too valuable a thing to be within the grasp of the idle.

I ask your lordships, whether parliament will be

in a state to transact public business, or be attended by a sufficient number of members, while engaged in preparing for a public election.

The meanest individual may apply to the law for his defence; for actual safety and the full assurance of safety are alike the right of all: that is, *All have a right to that safety and assurance of safety which the law provides: and therefore the meanest individual has that right.* Or thus, *That which is the right of all is the right of the meanest; but the safety which the law provides is the right of all; therefore, &c.*

Popular commotions, though commencing on a small scale, are so liable to ripen into systematic sedition, that they ought to be speedily and decisively checked.

Popular commotions, however small the scale on which they begin, ought to be speedily and decisively checked, on account of their great liability to ripen into systematic sedition.

That which, if left to its own course, though proceeding from circumstances apparently unimportant, has a tendency to advance to systematic sedition, (and this is undoubtedly the nature of all popular commotions, however insignificant in their origin,) calls for a speedy and decisive check.

Shame is not a virtue, for it bears the character of a passion rather than of a habit.

3. The enthymem is obviously adapted to fallacious arguments; because, although the implied premiss is known, yet the attention is not so strongly arrested to it; and therefore it may be false, or if true may occasion an incorrect reasoning, without being so readily detected. Thus it has been urged, "*I can shew the Protestant that many parts of the Bible are wanting. Where are the books of the Wars of the Lord? the books of Jasher, of Samuel, of Nathan, of Gad, of Iddo, of Ahijah, of Jehu, and*

of Shemeiah? Where are the songs and the natural history of Solomon, or the Epistle from Laodicea? But if the Protestant has not the whole Bible, that which he has cannot be a sufficient rule of faith to him." The question which the objector attempts to prove is, that *The Protestants' Bible is not a sufficient rule of faith.* The immediate argument advanced in support of this assertion is, that *An imperfect Bible is not a sufficient rule of faith; but the Protestant Bible is an imperfect Bible; therefore the Protestant Bible is not a sufficient rule of faith.* This argument is expressed in the above sentence by an enthymem containing the minor premiss and the conclusion. But the objector feels that minor premiss to be too weak to sustain his argument. He therefore attempts to confirm it by another fiction which constitutes the major premiss of another syllogism: namely, *Whatever Bible does not contain the books of Jasher, Nathan, &c. is an imperfect Bible; but the Protestant Bible does not contain the books of Jasher, Nathan, &c.: therefore the Protestant Bible is an imperfect Bible.* That major premiss is not expressed; and consequently some readers would not at all advert to the meaning of the implied proposition; while others would acquiesce under the influence of a kind of shame which is often felt at hesitating concerning that which the author treats as an obvious and undeniable truth.

Again, the infidel urges, *The New Testament was not written at the date when it professes to have been written, for it was never heard of until the Council of Laodicea.* But the fallacy is detected by completing the syllogism; thus, *No series of independent tracts or writings can exist before they are collected into one book and comprised under a common title; the New Testament is a series of independent tracts or writings; therefore the New Testament did not exist before it was collected into one book and com-*

prised under a common title. The major premiss is false.

Again, *Forgery must be punished with death, for it absolutely requires a powerful and decisive check.* That is, *Some powerful and decisive check is requisite to prevent the commission of forgery ; but the infliction of death is a powerful and decisive check ; therefore the infliction of death is requisite to prevent the commission of forgery.* But this is unsound, the middle term being undistributed. Or if thus represented, *Whatever is the only decisive check is requisite to prevent forgery; but death is the only decisive check, &c.* the minor premiss lies open to controversy.

2. *Inductio;* in quâ ponitur quantum opus est de singulis, et deinde assumitur de universis; ut, *Hic et ille et iste magnes trahit ferrum;* ergo *omnis.* Est igitur Enthymema quoddam; nempe Syllogismus in Barbara, cujus *Minor* reticetur; aliis placet *Majorem* deesse.

Induction is the derivation of general propositions from singular objects, and from those general propositions others still more general, and so on, till the mind arrives at the most general propositions, which, both on account of their priority in the order of nature, and of their use in syllogistic reasoning, are called *principles.*

It has been before observed, that syllogistic reasoning is founded on certain general principles, and that its appropriate office is to reduce those principles to that particular application which renders them practically useful in scientific pursuits,

and in the direction of conduct in common life. A natural enquiry therefore suggests itself: whence are these principles derived? Many of them may indeed be syllogistically traced back to principles more general; and these again to others of a still more general nature. But sooner or later the mind is checked in this career. It arrives at principles in which indeed it cannot but acquiesce; but the truth of which it cannot syllogistically demonstrate.

Of these principles, some rest solely on *testimony* or *authority*. The majority of mankind, for instance, implicitly receive their religious and philosophical tenets from their immediate ancestors, as these also did from theirs; and thus sometimes truth, but more frequently error, is perpetuated. So also a student may suppose himself to be following the dictates of his own mind, while he is really influenced by esteem for the judgment of the author whom he studies, or of the instructor to whose guidance he intrusts himself. But the only general principles which ought to rest on external testimony, are those of religious doctrine and obligation, which depend on the immediate authority of Him who cannot deceive or be deceived. Human testimony, strictly speaking, is to be received only in relation to facts: not for the establishment of general principles.

The principles acquired by human powers have been, by many, considered as twofold. Some have been supposed to be *intuitive;* and these are commonly called *axioms;* their extreme universality entitling them to a certain ἀξίωμα or *dignity*, above all propositions of a less comprehensive nature. Such are the mathematical axioms; *The whole is greater than any of its parts. Things equal to the same are equal to each other. Magnitudes which coincide with each other are equal to one another.*

The other class of general principles comprehends those which are acquired by *Induction;* which are

sometimes called *secondary axioms* or *principles*, sometimes *laws*, sometimes (εἴδη) *forms*.

But this distinction can scarcely be considered correct. It is highly probable, if not certain, that those primary axioms, which have been esteemed intuitive, are in fact acquired by an inductive process: although that process is less discernible, because it takes place long before we think of tracing the actings of our own minds. It is certain that it is often found necessary to facilitate the understanding of those axioms, when they are first proposed to the judgment, by illustrations taken from individual cases. But whether it is, as is generally supposed, the mere *enunciation* of the principle, or the *principle* itself, which requires the illustration, may admit of a doubt. It seems probable, however, that such illustrations are nothing more than a recurrence to the original method by which the knowledge of those principles was acquired. Thus the repeated trial or observation of the necessary connexion between mathematical coincidence and equality first authorizes the general position or axiom relative to that subject. If this hypothesis is correct, it follows that both *primary* and *ultimate* principles have the same nature, being alike acquired by the exercise of the inductive faculty.

Induction bears some analogy to *abstraction*. Both of them commence with individuals, and proceed, by successive comparisons, from these to generals, and from those things which are less general to those which are more general. But there is this essential difference between them; *Abstraction* is simply an instrument of classification, and relates to the formation and arrangement of notions; and the adoption of words to express those notions: whereas *Induction* is an instrument adapted to the discovery of laws and principles previously unknown.

In proportion, however, as our operations of abstraction are more correct, scientific, and complete, they approach more nearly to the nature of induction.

An induction in which every individual case is enumerated is a perfect demonstration. And in general, the more nearly we approach to the entire enumeration, the higher is the degree of probability attained by the induction: provided, at least, that no facts of an opposite tendency are discoverable; or that if they occur, they are satisfactorily shewn not to be *really* inconsistent with the principle deduced. The great error in induction is too great haste in drawing a conclusion without having premised a sufficient number of individual cases. Many, for example, if they have met with or heard of *one or two dishonest lawyers,* or observed *a comet in a warm summer,* think themselves authorized to draw the sweeping inference, that *all lawyers are dishonest,* or *all comets occasion a warm season.* So, because *the earth is watered by rain from the clouds in England, France, Spain, Italy, and every other part of Europe; and the same is found to be the case in the various parts of Asia, Africa, and America, concerning which we may have made enquiry,* it might be erroneously inferred that *every part of the earth is so watered.* Thus also, the medicine of an empiric is supported by a published induction of the many cures effected by it; which succeeds in deluding those who forget to consider how many cases are not published: the majority of which, it may be not unreasonable to suspect, were failures. Correct induction therefore requires much patience, caution, and diligent investigation.

Induction is most frequently employed in the acquisition of physical science, in the prosecution of

metaphysical researches, and on subjects of a moral or political nature.

1. *Moral Induction*, or *observation* of the motives and effects of human conduct, the influence of education, association, and other circumstances, is the foundation of the moral and political axioms (with the exception of those exclusively derived from divine authority) to which we habitually appeal for the regulation of our conduct in regard to ourselves or society in every new train of circumstances. The man of observation acquires from his historical knowledge, and from the facts which have successively presented themselves to his notice, when judiciously examined and compared with each other, a fund of axioms which he learns to apply syllogistically to any particular case, in relation either to the government of a state, the direction and instruction of others, or the regulation of his own conduct. Such a man is called *prudent*, and is said to possess a knowledge of human nature.

Moral proverbs are, or profess to be, the results of this kind of induction. The Proverbs of Solomon, though they also rest on the higher and indubitable foundation of inspiration, are general axioms, the result of the observations and comparisons of the wisest of men.

Aristotle adopts the inductive form, when he enumerates all the virtues; (viz. fortitude, temperance, liberality, magnificence, magnanimity, lenity, friendliness, veracity, politeness, modesty, and justice;) and after having shewn that each of them consists in a medium, infers, *Μεσότητας εἶναι τὰς ἀρετὰς πιστεύσαιμεν ἂν, ἐπὶ πάντων οὕτως ἔχον συνιδόντες.* (*Eth. Nic.* iv. 7.)

The Chorus in the Antigone of Sophocles (*ver.* 332—365.) establishes by an inductive process the position, *Πολλὰ τὰ δεινὰ, κοὐδὲν ἀνθρώπου δεινότερον πέλει.*

Again, Artabanus, in Herodotus, (vii. 18.) says,

Ἐπιστάμαι ὡς κακὸν εἴη τὸ πολλῶν ἐπιθυμέειν· μεμνημένος μὲν τὸν ἐπὶ Μασσαγέτας Κύρου στόλον ὡς ἔπρηξε, μεμνημένος δὲ καὶ τὸν ἐπ' Αἰθίοπας τοῦ Καμβύσεω, συστρατευόμενος δὲ καὶ Δαρείῳ ἐπὶ Σκύθας.

The inductive form is ironically employed by Socrates to expose the absurdity of his accuser:

(Σωκράτης.)	Εἰπὲ, ὦ ἀγαθὲ, τίς τοὺς νέους ἀμείνους ποιεῖ;
(Μέλιτος.)	Οὗτοι, ὦ Σώκρατες, οἱ δικασταί.
(Σωκρ.)	Πότερον ἅπαντες;
(Μέλ.)	Ἅπαντες.
(Σωκρ.)	Τί δὲ δή; οἵδε οἱ ἀκροαταὶ βελτίους ποιοῦσιν, ἢ οὔ;
(Μέλ.)	Καὶ οὗτοι.
(Σωκρ.)	Τί δὲ οἱ βουλευταί;
(Μέλ.)	Καὶ οἱ βουλευταί.
(Σωκρ.)	Ἀλλ' ἄρα, ὦ Μέλιτε, μὴ οἱ ἐν τῇ ἐκκλησίᾳ ἐκκλησιασταὶ διαφθείρουσι τοὺς νεωτέρους; ἢ κἀκεῖνοι βελτίους ποιοῦσιν ἅπαντες;
(Μέλ.)	Καὶ ἐκεῖνοι.
(Σωκρ.)	Πάντες ἄρα, ὡς ἔοικεν, Ἀθηναῖοι καλοὺς κἀγαθοὺς ποιοῦσι, πλὴν ἐμοῦ.

Plato Apol. Socr. §. 12.

The following extract affords another instance of inductive reasoning of the moral kind.

It is evident that paganism must have originated in a wilful departure from the truth. For when we consider, that man was not from the beginning left to himself to discover the true Author of nature, or the worship that was due to him; but was instructed by immediate communication from his Creator in every thing relative to his spiritual concerns: how can we regard the introduction of false divinities in any other light than that of wilful apostacy from the true God? Ignorance could not be the cause of Cain's departure from the faith; nor of the infidelity of his immediate descendants; neither could it be pleaded in excuse for the children of Seth, emphatically called "the sons of God," when they forfeited their claim to

that title, by entering into alliance with the wicked posterity of Cain. The same is to be observed respecting the immediate descendants of Noah, whom we cannot suppose to have been ignorant of the true religion founded on the expectation of the promised Redeemer, notwithstanding their readiness, so soon after the flood, to renounce that expectation, and to follow their own corrupt imaginations.

This is a perfect induction; for it enumerates all the individuals in whom idolatry could possibly have *originated;* since by others it has been adopted from imitation only.

A beautiful specimen of moral induction occurs 2 Peter ii. 4—9. The conclusion is twofold; and the sacred writer accordingly adduces a double train of individual instances, strikingly contrasted with each other. The substance of the arguments is this: *The offending angels,—the antediluvian world,—the inhabitants of Sodom and Gomorrah,—were divinely punished;* therefore, *all the unjust shall be divinely punished.* Again, *The holy angels who did not offend,—Noah, the preacher of righteousness,—and just Lot,—were delivered from trial; therefore all the godly shall be delivered from trial.*

The three introductory chapters of the Epistle to the Romans contain an inductive argument; in which the proposition, *All have sinned*, is inferred to be universally true, because it has been successively proved true, first concerning all Jews and then concerning all Gentiles.

Again, the general conclusion in Psalm xxxvii. 23, 24, as deduced from the train of observation mentioned in the subsequent verse;—and that in the 38th verse, as deduced from verses 35, 36, are specimens of moral induction.

2. In *Metaphysical Induction* a great degree of obscurity necessarily prevails. In that branch of metaphysics, for instance, which relates to the

powers and operations of the mind, the student has, primarily, but one subject on which he is able to make his observations; namely, his own mind. By habitual reflection, however, he may watch and scrutinize its operations under the influence of a variety of different circumstances. And he may infer, with a high degree of probability, that the process which he discovers to take place in his own mind, bears a great similarity to that which occurs in the minds of men in general. Yet he is continually liable to be misled in consequence of an inability to distinguish between those operations which are purely natural and common to all who are possessed of mind, and those which are adventitious, the result of early habits and associations formed long before he had entered on his philosophical speculations.

Next to his own experience, the metaphysician is enabled to improve his acquaintance with the human mind by tracing its operations in those about him. Here he has a wide scope. He learns something from the old and young, the rich and poor, the learned and unlearned, the poet and the philosopher. Yet here also he lies under a great disadvantage; he can only conjecture what passes in the mind of others, by the means of the expressions, the conduct, the countenance, and other external circumstances, which are but imperfect and often inaccurate indices of the real operations of the mind.

The recorded sentiments of other metaphysical students afford a third, but perhaps the most exceptionable help to this species of induction. These should be received with suspicion; for every writer of talent is able so to trace out his opinions on this subject, that the mind of the student is involuntarily borne along; and is made to feel as if its own previous and natural mode of operation were described

by the writer, while in fact it does no more than follow the line which is, as it were, arbitrarily marked out for it.

These circumstances retard the progress of this branch of metaphysical science, so that it still continues and probably will long continue to be in a state of much imperfection.

3. *Physical Induction* consists in the right use of observation and experiment in regard to external objects; and the deduction of correct inferences from them. The most simple process of physical induction is to watch the unbiassed operations of nature. But the results derived from such observation most frequently require to be confirmed by experiments; by which nature is (if we may so speak) compelled to perform her operations under those circumstances and limitations which man sees fit to prescribe. This is usually a long and laborious process; but it is necessary for the investigation of truth. The operations of nature are sometimes too magnificent and extensive for the grasp of our contracted senses; but experiments reduce these operations, as it were, to a miniature form, so as to enable the philosopher to trace at one view their nature, causes, and consequences. They are at other times too subtle, too rapid, or too secret to be observed; they require therefore to be educed by particular experiments, and thus subjected to the scrutiny of the senses.

Thus the geologist follows nature by a protracted and laborious research, wherever he may have opportunities of witnessing the interior formation of the earth, or of receiving facts concerning it from others. On the other hand the philosophical chemist makes nature display itself in his laboratory by repeated experiments.

By means of observation and experiment the na-

tural philosopher at first does no more than make an historical record (either mentally or actually) of the facts or phenomena which have come to his knowledge: he then endeavours to classify those facts; to contrast them with all such facts as appear to be of an opposite nature; and by dividing and separating essentials from non-essentials, things necessary from things contingent, he determines and distinguishes in every object the nature from its properties and accidents; he traces phenomena to their physical causes or antecedents; divests them of those similarities or differences which are merely apparent; classifies them according to their real relations to each other; and thus discovers those general principles or laws according to which all things are regulated, and the knowledge of which constitutes true science.

For example; the practical miner, on the discovery of a *pebbly red sand-stone*, will probably assert without hesitation that *coal* may be found within a moderate depth from the surface. His induction is however incomplete; he is biassed by localities, and judges without any scientific acquaintance with the structure of the earth. The attempt may be made, and the expectations of the proprietor disappointed. This fact presents an apparent opposition to the general principle that *red sand-stone on the surface indicates coal beneath.* But the philosopher, by more extensive examination, ascertains that there is also *another* stratum of *pebbly red sand-stone*, subjacent to the *coal strata*, bearing a very great similarity to the former. By repeated examinations however he discovers certain uniform marks of distinction between the *superincumbent* and the *subjacent* stratum. This discovery at once produces an important step in the advancement of the science, and may rescue many from the toil, expense, and disappointment of seeking coal beneath a stratum to which it must necessarily be superior.

It is thus, also, that the utility of *vaccination* has been established. It was not sufficient that a vast mass of individual instances of *successful* vaccination should be adduced; every search and enquiry has been made to discover *failures*. These have been accurately recorded, and diligently examined. Many were found to be merely idle reports. Others proved to be instances of real failure. The circumstances attending these cases have, as far as was practicable, been scrutinized. The proportion of failures to the successful cases has been ascertained to an astonishing degree of precision; and the beneficial effects of the practice have by this process been far more undeniably and satisfactorily established, than they would have been by any vague assertion of its universal and unerring efficacy.

The laws or conclusions acquired by induction are syllogistically applied to any new case in which no opportunity of observation or experiment is afforded. But such cases, as soon as observation or experiment can be applied to them, reciprocally become parts of the aggregate from which the conclusion is derived, and consequently are fresh confirmations to the general law. Thus by a syllogistic application of general principles, the laws which regulate the motion of the planet Uranus were ascertained before it had accomplished the tenth part of its orbit from the place in which it was discovered. When observation shall have traced it till its return to that place, those laws will no longer depend on the syllogistic inference; but will be established by induction, and will afford additional confirmation to the already-discovered laws of the motions of the heavenly bodies in general. Each successive observation of astronomers constitutes a part of the inductive process; as does also the fact that Flamsteed, Mayer, and Le Monnier have pointed out stars, which are now not discoverable, in the very places where, according to

calculation, Uranus would have been at the respective periods when their observations were made.

To attempt, however, a full illustration of the process of physical induction would be to explain the science, or at least the branch of science, from which the illustration should be borrowed. The history of the discovery of the circulation of the blood; of gravitation; of the laws of light and motion; of the modern improvements in chemical, geological, and agricultural science, which may be found in particular treatises, or in a good Encyclopedia, will best serve to illustrate its nature.

Those who acquiesce in the preceding observations will feel a regret to find *Induction* classed among defective or informal syllogisms. In the text, one of the premises is said to be understood. Some represent the *minor* premiss to be suppressed; and the argument is considered reducible to this form: *A certain number of examined cases agree with a certain general law; all the cases belonging to the same species are virtually the same thing as that given number of examined cases: therefore all the cases belonging to the same species agree with that general law.* Or, to adopt the example adduced, *All the examined specimens of the species of iron ore called magnet have the property of attracting iron; but all existing specimens of that ore are (or may be deemed equivalent to) the aggregate of examined specimens; therefore all magnets have the property of attracting iron.* Others, rather more appropriately, contend that the *major* premiss is to be supplied, and that the syllogistic statement is as follows: *That property which belongs to every examined specimen of magnet belongs to the whole species; but the power of attracting iron is a property which belongs to every examined specimen of magnet; therefore the power of attracting iron belongs to the entire species of the magnet.* But, to allow the ut-

most, this represents only the final part of the process. The essence of the induction consists, first, in the accumulation of the individuals examined, so as to authorize the assertion contained in the minor premiss; and then, in the calculation of probabilities requisite to establish the major premiss.

The observation therefore of Aristotle, that induction is prior in its nature to syllogism, appears to be correct. Nor can syllogistic reasoning be carried on to any extent without previous induction.

Yet this acknowledged dignity and value of induction has no tendency to degrade the syllogistic system. It does not afford any sufficient reason either for the omission of this branch of logic, or for the universal study of the inductive system. For though, theoretically, as before observed, no human testimony will authorize our admission of general principles; yet in fact the greater part of mankind must rely on testimony. We are compelled to act on the principle, (however incorrect it is in theory,) *cuique in suâ arte credendum.* Few are competent to repeat the inductive process of a Harvey, a Galileo, or a Newton; or to follow a modern geologist in his researches over almost every part of the globe. Few are able even to peruse the history of the phænomena and experiments which others have recorded, and thus, taking the facts only for granted, to deduce their own conclusions. The majority, even of literary and scientific men, must be contented, on most subjects, with a superficial knowledge; merely taking upon trust the general results, without any acquaintance with the train of observation and discovery on which they were originally founded. And the case is similar in respect to moral induction. Our own opportunities of observation are limited; we must continually rely, in practice, on the counsels and opinions of others on subjects of moral and political expediency.

And this necessity appears to be the true reason why the syllogistic system should be first and most generally understood. For while few have opportunities or powers to carry on an inductive process beyond the simple observation of those things which present themselves unsought to their notice, all have daily occasion to use that kind of reasoning which depends on syllogistic principles. No step in common life can be taken without it. It is convenient indeed, if practicable, to obtain an acquaintance with the process by which general principles are acquired; as it is an advantage to the manufacturer to understand the nature and construction of his machinery. Yet if his machinery should be beyond his comprehension, he still finds by experience its utility, and carries on his work. To abolish or to lay aside the use of syllogism, for the sake of devoting every power to the advancement of inductive knowledge, would be not less absurd than if our manufacturers should cease from their beneficial occupations until they should succeed in bringing mechanism to the highest pitch of perfection.

3. *Exemplum;* (Aristoteli *Inductio Oratoria;*) ubi quod ponitur de singulari noto, assumitur de simili ignoto: ut, *Sylla et Marius laceravere rempublicam;* ergo *Cæsar et Pompeius lacerabunt.* Hujus etiam minor vel major reticetur; quapropter quæstionem *assumi* dico; neque enim *colligitur* nisi ex posito et subintellecto.

Example differs from *Induction* chiefly in these two respects:

1. As to the *antecedent;* which in *Induction* must

consist of the enumeration of *several* singular facts; whereas *Example* does not require more than *one*.

2. As to the *conclusion;* which in *Induction* is, either strictly or morally, *universal;* but in *Example* is *singular*.

The following are specimens of arguments from *Example*.

Hannibali imperatori parem consulem nominare decet. Hoc anno, ad Capuam, Jubellio Taureæ Campano summo equiti provocanti summus Romanus eques Asellus Claudius est oppositus. Adversus Gallum, quondam provocantem in ponte Anienis, T. Manlium, fidentem et animo et viribus, misêre majores nostri. Ob eandem causam haud multis annis post fuisse non negaverim, cur M. Valerio non diffideretur, adversus similiter provocantem arma capienti Gallum ad certamen. Quemadmodum pedites equitesque optamus, ut validiores, si minus, ut pares hosti habeamus; ita duci hostium parem imperatorem quæramus. (*Liv. ex Fabii oratione:* xxiv. 8.)

In minore te experti, Otacili, re sumus. Haud sane, cur ad majora tibi fidamus, documenti quidquam dedisti.... Si te classem obtinente, etiam, veluti pacato mari, quælibet Hannibali tuta atque integra ab domo venerunt; si ora Italiæ infestior hoc anno, quam Africæ, fuit; quid dicere potes, cur te potissimum ducem Hannibali hosti opponant? (*Liv. ib.*)

Artabanus employs this kind of argument to dissuade Xerxes from his intended invasion of Greece. Ἐγὼ Δαρείῳ ἠγόρευον μὴ στρατεύεσθαι ἐπὶ Σκύθας, ... ὁ δὲ στρατευσάμενος, πολλούς τε καὶ ἀγαθοὺς τῆς στρατιῆς ἀποβαλὼν ἀπῆλθε. Σὺ δὲ, ὦ βασιλεῦ, μέλλεις ἐπ' ἄνδρας στρατεύεσθαι πολλὸν ἔτι ἀμείνονας ἢ Σκύθας. (*Herod.* vii. 10.) Two or three other instances of this kind occur in the same speech.

Hermocrates, when announcing to the Syracusans the expected approach of the Athenian armament, argues in the same manner from the defeat of the Persian invaders of Greece (a fact already known) to

the probable destruction of the invaders of Sicily. (*Thuc.* vi. 33. Ὀλίγοι γὰρ . . . . ξυμβῆναι.)

Demosthenes thus introduces an apposite Example: Ὑπὲρ ἧς (χώρας) ὡς μὲν τοὺς ἐπιόντας ἐκείνων ἀμυνούμεθα, οἱ ἐν Μαραθῶνι τῶν προγόνων αὐτοῦ μάλιστα ἂν εἰδεῖεν. (Περὶ τῶν συμμορ.)

A correct and forcible instance of this mode of argument by analogy occurs in 1 Samuel xvii. 34—47. The *examples* also used by the Israelites in their lively remonstrance with the Reubenites, &c. (Josh. xxii. 17, 18, 20.) by the Jewish elders in behalf of Jeremiah, (Jer. xxvi. 17—19.) and by Gamaliel in behalf of the apostles, (Acts v. 36—39.) are very apposite and striking. The speech of Rabshakeh, recorded in Isaiah xxxvi. 18, 19, 20. presents a fallacious instance of the same. The conclusion in this case is not drawn *de simili;* there was no just comparison between the omnipotent God of Israel and the idol-gods of the heathen.

This species of argument, even when derived from real facts, produces only a low degree of moral probability. But it comprehends also *similes*, and even *fables*, which, although really no more than illustrations, affect the unguarded mind as if they were arguments, and are therefore frequently substituted for proof by Rhetoricians. Thus the latter part of the first illustration from Livy (*Quemadmodum pedites, &c.*) is an *Example;* though of an inferior order to those contained in the preceding portion of that sentence. Thus Demosthenes: Ὁ μέν γε (βασιλεὺς) χρυσίον, ὥς φασιν, ἄγει· τοῦτο δὲ ἂν διαδῷ, ζητήσει· καὶ γὰρ τὰς κρήνας, καὶ τὰ φρέατα ἐπιλιπεῖν πέφυκεν, ἐάν τις ἀπ᾽ αὐτῶν ἀθρόα καὶ πολλὰ λαμβάνῃ. (Περὶ συμμορ.)

Again, *He who voluntarily continues in ignorance, is guilty of all the crimes which ignorance produces; as to him who should extinguish the tapers of a light-house may justly be imputed the calamities of shipwreck.* (*Dr. Johnson.*)

4. *Sorites;* in cujus Antecedente, ex ordinatâ serie terminorum, præcedens quisque *subjicitur* sequenti, donec a *subjecto* quæstionis pervenitur ad *prædicatum;* v.g. *Homo est animal: animal est vivens: vivens est substantia;* ergo *Homo est substantia.* In Sorite igitur subaudiuntur tot Syllogismi quot sunt intermediæ propositiones; (vel si mavis, quot in antecedente termini intermedii;) unde et a cumulo nomen habet. N.B. In Antecedente Minor Premissa præcedit Majorem.

In the following Epicurean Sorites, though some of the premises, and consequently the conclusion also, are false, the argument is formally correct. *Quoniam deos beatissimos esse constat; beatus autem esse sine virtute nemo potest; nec virtus sine ratione constare; nec ratio usquam inesse nisi in hominis figurâ; hominis esse specie deos confitendum est.* (*Cic. de Nat. Deor.* §. 18.) Which may be thus stated:

The gods are happy beings;
All happy beings are virtuous;
All virtuous beings are endued with reason:
All beings endued with reason bear the human form;
Therefore, The gods bear the human form.

The intermediate terms of the antecedent, and the intermediate propositions of the whole argument, are three. Consequently this Sorites is no more than a condensed expression of three categorical syllogisms: which may be thus displayed at length.

1. *All happy beings are virtuous; the gods are happy; therefore the gods are virtuous.*

2. *All virtuous beings are endued with reason; the gods are virtuous beings; therefore the gods are endued with reason.*

3. *All beings endued with reason bear the human form; the gods are endued with reason; therefore the gods bear the human form.*

In this analysis, the first two propositions of the Sorites, transposed, constitute the premises of the first syllogism. The conclusion from these premises forms the minor premiss of the second syllogism; the major premiss of which is the third proposition of the Sorites. The conclusion of this second syllogism forms the minor premiss of the third, while the major premiss consists of the fourth proposition of the Sorites, which is here the last of the antecedent. This is therefore the last syllogism, and its conclusion is the inference of the whole Sorites.

The Sorites may be analysed in another method, by taking the propositions of the antecedent in a retrograde order: thus;

1. *Whatever is endued with reason bears the human form; Every virtuous being is endued with reason; Therefore, every virtuous being bears the human form.*

2. *Every virtuous being bears the human form; Whatever is happy is virtuous; Therefore, whatever is happy bears the human form.*

3. *Whatever is happy bears the human form; The gods are happy; Therefore, the gods bear the human form.*

According to this method, the proposition last in order in the antecedent of the Sorites is the major premiss of the first syllogism; and the proposition immediately preceding the last, is its minor premiss. The conclusion of the first syllogism constitutes a second major premiss, to which the last proposition but two, of the Sorites, affords a minor premiss:

and so on, till all the propositions of the Sorites are exhausted. The first proposition becomes the minor premiss of the last syllogism, the conclusion of which is the general inference of the Sorites.

The inspired author of the Epistle to the Romans more than once employs this mode of argument. The Sorites in chap. viii. 29, 30, when reduced to form, and expressed in the most concise manner, will appear thus:

All the foreknown are predestinated:
All the predestinated are called:
All the called are justified:
All the justified are glorified:
Therefore, All the foreknown are glorified.

Aristotle argues thus: Οὐκ ἂν, μὴ οὔσης ἀλλαγῆς, κοινωνία ἦν· οὔτ᾽ ἀλλαγὴ, ἰσότητος μὴ οὔσης· οὔτ᾽ ἰσότης, μὴ οὔσης συμμετρίας. (*Eth. Nic.* v. 5.) That is; *The preservation of society requires exchange; Whatever requires exchange requires equitable valuation of property; Whatever requires equitable valuation of property requires the adoption of a common measure: Therefore the preservation of society requires the adoption of a common measure.*

The first and second propositions of this Sorites, when transposed, afford premises in Barbara, which prove the conclusion, *The preservation of society requires equitable valuation of property*. And this conclusion, with the third proposition in the Sorites, constitutes another antecedent in Barbara, whence is deduced the conclusion above drawn, namely, *The preservation of society requires the adoption of a common measure.*

Syllogismus ex propositionibus constat, propositiones ex verbis, verba notionum tesseræ sunt. Itaque si notiones ipsæ (id quod basis rei sunt) confusæ sint et temere a rebus abstractæ, nihil in iis quæ superstruuntur est firmitudinis. (*Bac. Org.* 14.) That is; *Syllogisms are composed of propositions; whatever is*

composed of propositions is composed of the constituent parts of propositions, namely, words; that which is composed of words is composed of the symbols of notions; that which is composed of the symbols of notions is composed of the symbols of things confused, and rashly abstracted; whatsoever things are composed of such symbols must themselves be weak and unsound; therefore syllogisms are weak and unsound. This argument is therefore a compression of four syllogisms in *Barbara.*

The two following rules are rendered obvious by the preceding analysis of the nature of a Sorites.

1. Its antecedent admits of no *negative* proposition except the *last.* For each of the other propositions must be either a minor premiss in the first figure; and therefore affirmative: or a major premiss of a syllogism of which the conclusion must be affirmative.

2. Its antecedent admits of no *particular* proposition except the *first.* For all the other propositions are successively major premises in the first figure, and therefore universal.

5. Soriti affinis est Syllogismus, cujus præmissarum altera est sententia Enthymematica; ut, *Nullus injustus est amandus: Omnis Tyrannus (crudelis cum sit) est injustus;* ergo, *Nullus Tyrannus est amandus.* Qui quidem Syllogismus peculiare nomen non habet; præmissæ autem Enthymematicæ antecedens, Aristoteli *Prosyllogismus* est.

The *Prosyllogism* is an appended proposition which is incidentally introduced to confirm one of

the premises of the main argument. It forms the premiss of a distinct enthymem, of which the proposition to which it is adjoined is the conclusion. The syllogism thus combined with its prosyllogism is called an *Epichirema*.

The plan of Cicero's oration in defence of Milo is frequently adduced as a good instance of this mode of reasoning. It is to this effect: *He who attempts to assassinate another, may be justly killed by the object of his murderous intentions: (for the laws of nature and of nations, and the conduct of good men, prove it lawful:) But Clodius attempted to assassinate another; (for he formed an ambuscade against him, and provided himself with armed soldiers:) Therefore Clodius was justly killed by the object of his murderous intentions.*

Ὡμοίωται δὲ ἡ πολιτικὴ ἀνδρεία μάλιστα τῇ ἀληθινῇ, ὅτι δι' ἀρετὴν γίνεται· δι' αἰδῶ γὰρ, καὶ διὰ καλοῦ ὄρεξιν, (τιμῆς γὰρ,) καὶ φυγὴν ὀνείδους, αἰσχροῦ ὄντος. (*Arist. Eth. Nic.* iii. 8.) This sentence contains a complex epichirema, comprehending three leading prosyllogisms, together with two others, subordinate to the former. The main argument consists of the enthymem, *Political fortitude is produced by virtue, and therefore bears most similarity to genuine fortitude.* To the expressed premiss, which is the minor, three prosyllogisms or enthymematic proofs are adjoined; δι' αἰδῶ γάρ· διὰ καλοῦ ὄρεξιν· διὰ φυγὴν ὀνείδους. To the second of these is added a subordinate proof or prosyllogism, τιμῆς γάρ: and to the third, another subordinate prosyllogism, αἰσχροῦ ὄντος.

Confidence in promises is essential to the intercourse of human life; because without it, the greatest part of our conduct would proceed upon chance. But there could be no confidence in promises, if men were not obliged to perform them; the obligation therefore to perform promises is essential to the same ends and in the same degree. (*Paley.*) This is a syllogism, stated at full length, and having a prosyllogism,

(*because without it, &c.*) attached to the major premiss.

The publication of a libel is criminal: but the act of putting a libel into the post is an act of publication: (for the moment a man passes the libel from his hand, his control of it is gone:) that act therefore cannot but be pronounced criminal. (*Lord Ellenborough.*)

The following is an *epichirema*, or an enthymem confirmed by a prosyllogism. *Syllogismus ad principia scientiarum non adhibetur, ad media axiomata frustra adhibetur, (cum sit subtilitati naturæ longe impar:) assensum itaque constringit, non res.* (*Bacon. Org.* i. 13.)

6. Huc denique revocandum est compendium illud disputandi opponentibus usitatissimum, reticendi scilicet conclusionem; cum sit ipsa quæstio, quam respondens non supponitur ignorare.

This practice of not making a precise statement of the conclusion at the close of every argument, is not confined to *opponents* in formal disputations; but is the natural habit of all who are discussing a subject in private conversation, in public deliberations, or in argumentative compositions. To act otherwise would frequently occasion needless tautology and waste of time.

Yet the habit of suppressing the conclusion affords a great facility to the use of fallacious arguments; especially in those branches of fallacy which are denominated *ignoratio elenchi*, or the proving something different from the real question; and *fallacia consequentis*, or the fictitious mode of reasoning generally called a *non-sequitur*.

For example; Let the question be put by a supposed enquirer; *Is it not wrong to bow down before images?* To which the instructor answers thus: *If it is not lawful for Catholics to bow down in their chapels, how comes it to be lawful for Protestants to bow down themselves when they enter their churches? Again, why do the Protestants let beggars bow down at their doors for a morsel of bread, their little children bow down for their parents' blessing, the poor bow down before the rich? And all the Protestants bow down before the Lord's supper; and even to an empty chair when it is set for the king's throne in the parliament house.* The argument is apparently an *argumentum ad hominem;* thus; *Any practice maintained by our opponents may be assumed to be free from objection; but bowing is a practice maintained by our opponents; (as proved by an induction of particular instances;) therefore bowing may be assumed to be free from objection.* But this is not the conclusion required: the question does not refer to the objectionableness of *bowing* absolutely; but to that of *bowing before images.*

It is therefore important that every hearer or reader should frequently recal to his mind the real question under discussion, and examine whether the arguments adduced apply to it, or to some other proposition which bears a resemblance to it.

A few examples (correct and incorrect) of all these modes of reasoning will be found at the close of the Appendix, in the second series of "Promiscuous Syllogisms."

CAP. IV.

DE SYLLOGISMIS HYPOTHETICIS.

§. 1. *De Syllogismis Conditionalibus.*

SYLLOGISMUS Hypotheticus est in quo una, duæ, vel tres propositiones hypotheticæ; v. g. *Si sapit, est beatus: Sapit;* ergo *est beatus.* Vel[a], *Qui sapit est beatus: Si est Philosophus, sapit;* ergo *Si est Philosophus, est beatus.* Vel, *Si sapit, est beatus: Si est Philosophus, sapit;* ergo *Si est Philosophus, est beatus.* Nos de eo tantum loqui instituimus qui est cæteris *usitatior*, in quo nempe Major Hypothetica.

Propositio Hypothetica late sumta definitur, Plures Categoricæ per conjunctionem aliquam

[a] Hinc liquet quomodo Hypothetici Syllogismi ad Categoricorum formam reduci possunt; viz.

Qui sapit est beatus.
Qui est Philosophus sapit.
Qui est Philosophus est beatus.

Siquando subjectum Antecedentis aliud ac Consequentis erit, e. g. *Si sol est ortus dies est,* pro Conditionali Copula substituere licet *quandocunque,* vel alia quælibet Vocabula, quibus Categorice efferatur Hypothetica Propositio.

Quandocunque sol ortus fuerit dies est:
Jam sol est ortus;
Jam dies est.

unitæ; et conjunctio vocatur *Copula;* estque *Conditionalis*, *Disjunctiva*, *Causalis* &c. ut apud Grammaticos; unde totidem Hypotheticarum species, suis copulis cognomines. Sed ad Syllogismum non faciunt, præter *Conditionalem*, et *Disjunctivam;* quarum exempla, *Si sapit est beatus. Vel dies est vel nox.*

The definition here given of *hypothetical propositions* is by far too vague, and deviates from the common as well as the technical signification of that term. It in fact includes every kind of compound sentence. According to this definition the following sentences would be hypothetical; for each of them is composed of two or more categorical propositions united by a conjunction or copula.

Solon was an Athenian [and] Lycurgus a Lacedemonian.

Man appears mean and worthless now, [but] a nobler state is in reserve for him.

The understanding sometimes rests on testimony, when testimony of right has nothing to do, [because] it is easier to believe than to be scientifically instructed.

The thing under proof is not capable of demonstration, [and therefore] must be submitted to the trial of probabilities.

[If] a man has for haste skipped over what he should have examined, he must begin and go over all again, [or else] he will never come to knowledge.

The light of knowledge is pure and bright, [unless] it be perverted and polluted by wickedness or imperfect instruction.

The definition of a hypothetical proposition which has been given in the second chapter, namely, *Quæ*

sub conditione enunciat, (see pages 92 and 94,) is more accurate. This comprehends the two species of hypothetical sentences; namely, those in which the condition is expressed; and those in which it is implied. The former are called *conditional* propositions; as, *If restrictions are essential to security, they are not inconsistent with civil liberty.* The latter are *disjunctive* propositions; as, *Monarchies are either hereditary or elective. Either Metius or Galileo was the inventor of the telescope.*

Hypothetical syllogisms are accordingly either *conditional* or *disjunctive*.

1. *Conditional syllogisms* may consist of *three* conditional propositions: as,

If light is not refracted near the surface of the moon, it cannot experience any twilight;

But if the moon has no atmosphere, light is not refracted near its surface:

If therefore the moon has no atmosphere, it cannot experience any twilight.

Others contain *two* conditional propositions; namely, one of the premises and the conclusion: as,

None who neglect to fulfil their engagements can reasonably expect to maintain their credit:

But if a man does not pay his debts, he neglects to fulfil his engagements:

Therefore if a man does not pay his debts, he cannot reasonably expect to maintain his credit.

But the species of conditional syllogism which is of most extensive use is that which consists of one conditional proposition followed by a categorical premiss and conclusion: as,

If liberty has a tendency to degenerate into licentiousness, it requires to be restricted by judicious laws:

But liberty has a tendency to degenerate into licentiousness:

Therefore it requires to be restricted by judicious laws.

2. *Disjunctive syllogisms* admit only of the last of the above forms; as

The affinities of natural substances must be ascertained either by syllogistic or by inductive process:

But those affinities cannot be ascertained by syllogism:

Therefore they must be ascertained by induction.

To denominate the hypothetical proposition in a syllogism, *the major premiss*, is inaccurate, and calculated to create confusion.

Conditionalis habet vim illativam. Unde *Conditio* ipsa, sive pars prior, quæ est instar inferentis, *Antecedens* dici solet; *Assertio*, sive pars posterior, quæ rationem habet illatæ, *Consequens;* partiumque inter se connexio, *Consequentia.*

A conditional proposition does not affirm the truth of either of the categorical propositions of which it is composed; but merely states that there exists such a connexion between them that if the former of them, or the supposition, be granted, the latter must follow. And this connexion is called the *consequence*. (See page 136.) Thus the sentence, *If ab is equal to xy, then* $\frac{a}{x}$ *is equal to* $\frac{y}{b}$, involves no intimation of the truth or falsehood of the assertion, *ab is equal to xy*, or of the assertion, $\frac{a}{x}$ *is equal to* $\frac{y}{b}$; but, laying down the former as a *condition*, it then asserts that the latter would necessarily follow from that condition. From their

relative situation in sense, and most frequently in arrangement, the former member of a conditional sentence is technically called the ***antecedent;*** the latter the *consequent.*

Condition or Antecedent.	*If the human soul is immaterial,...*
Assertion or Consequent.	*It is immortal.*
Condition or Antecedent.	*If words have no natural meaning of their own,...*
Assertion or Consequent.	*They carry to the hearer whatever sense he has been used to attach to them.*

In the following sentence the consequent precedes the antecedent. *There could be no confidence in promises, if men were not obliged to perform them.*

The following propositions bear only the form of hypotheticals, because there is no *consequence* or mutual dependence between their members. *If the sky should fall, we shall catch larks. If Mars and Jupiter are in opposition, bitter calamities will befal our country.*

Conditionalis cujusque sententia est, quod, datâ Conditione, datur Assertio; quod bifariam explicari potest. 1. *Si detur* Conditio, *danda est* Assertio; unde *Regula prima:* Positâ Antecedente, recte ponitur Consequens. 2. Si daretur Conditio, *danda esset* Assertio; unde *Regula secunda:* Sublatâ consequente, recte tollitur Antecedens.

Porro hoc unum statuit, Antecedente verâ, veram esse Consequentem; non autem ambas

esse simul veras, aut simul falsas, aut una vera, falsam alteram: per illam igitur, sublatâ Antecedente, poni vel tolli potest consequens; aut positâ Consequente, poni vel tolli potest Antecedens. Unde *Regula tertia:* Sublatâ Antecedente, vel Positâ Consequente, nihil certo colligitur.

Conditionalis igitur Syllogismi duæ sunt, nec plures, formulæ.

I. Quæ vocatur *Constructiva.*

Si C. D. tum K. Δ.
Sed C. D. ergo K. Δ.

II. Quæ dicitur *Destructiva.*

Si C. D. tum K. Δ.
Sed non K. Δ. ergo non C. D.

1. The very form of a *conditional proposition* implies that if the *condition* or *antecedent* be actually granted, the *assertion* or *consequent* must be admitted. Hence the first rule; *The antecedent being laid down as true, the truth of the consequent is legitimately inferred.*

The conditional syllogism founded on this principle is said to be of the *constructive* form.

If the practice excites discontent, it should be at once suppressed: But it does excite discontent; Therefore it should be suppressed.

If the moon is this day in its first quarter, it cannot be eclipsed; But it is this day in its first quarter; Therefore it cannot be eclipsed.

2. From the necessary connexion or *consequence* between the condition and the assertion in a correct

conditional proposition, it is further evident, that, *supposing* the condition to be true, the assertion will then be *necessarily* true. If therefore it is ascertained that the assertion is *not* true, it must follow that the condition is *not* true. This principle gives occasion to the second rule: *If the consequent is denied, the antecedent is also to be denied.* The syllogism formed on this principle is said to be of the *destructive* form. Thus,

If words were not ambiguous, they would never have been the occasion of useless controversy: But they have repeatedly been the occasion of useless controversy: Therefore they are ambiguous.

If each man ought to have more wives than one, more than one would have been given to Adam: But not more than one was given to Adam: Therefore each man ought not to have more than one.

If they had been of us, they would have continued with us; but they went out, that they might be made manifest that they were not all of us: (1 *John* ii. 19.) that is, destructively; *but they did not continue with us; therefore they were not of us.*

If the inheritance be of the law it is no more of promise; but it was given to Abraham by promise; therefore it is not of the law. (*Gal.* iii. 18.)

3. The assertion of the consequent, or the denial of the antecedent, cannot authorize any conclusion. For the conditional proposition affirms only that *the given antecedent* must be attended by *the given consequent.* But it does not denote any limitation to the consequent. For although that consequent *may* accompany the *given antecedent,* yet it is not exclusively confined to it; but may also follow from some *other antecedent.* For instance:

If the mill has too copious a stream, it cannot work; but it has not too copious a stream; therefore . . . . . .

If the mill has too copious a stream, it cannot

work; but the fact is that it cannot work; therefore . . . . . .

It cannot be inferred in the former instance that *the mill can work;* or in the latter instance, that *it has too copious a stream;* because the same consequent might follow from *a deficiency of water, a want of repair*, or some other cause.

The distinction between the *constructive* and the *destructive* form bears no relation to the *quality* of the conclusion. Affirmative and negative conclusions may be inferred by either method, as is shewn by the examples above given.

It is very frequent to express the conditional proposition alone; since the sense, the connexion, or even the tone of the speaker, sufficiently intimates whether the constructive or the destructive argument is intended. For example:

If thou didst receive it, why dost thou glory? (1 Cor. iv. 7.) that is, constructively; *If thou hast received as a free gift every good thing thou possessest, thou hast no cause to glory in thyself; but thou hast received as a free gift every good thing which thou possessest; therefore thou hast no cause to glory in thyself.*

If this man were not of God he could do nothing: that is, destructively; *but he has wrought this great miracle; therefore he is of God.*

If righteousness come by the law, then Christ is dead in vain.

If schisms be an evil, they who give unnecessary offence are as much to be blamed as they who take it: that is, constructively; *but schisms are an evil, therefore,* &c.

Neque enim bonitas, nec liberalitas, nec comitas esse potest, non plus quam amicitia, si hæc non per se expetantur, sed ad voluptatem utilitatemve referantur: that is, destructively; *si bonitas, &c. non sunt per se expetendæ, esse non possunt: sed sunt*

bonitas, liberalitas, &c.; ergo, per se sunt expetendæ.

Si utilitas firmâ corporis constitutione ejusque constitutionis spe exploratâ continetur; certe hæc utilitas cum honestate pugnabit. The argument implied is, *Sed hoc fieri nequit, ergo nec illud.*

When the argument is expressed, it is usually for the purpose of appending a prosyllogism to the categorical premiss: as,

If there be no resurrection of the dead, then is Christ not risen; but our blessed Lord is risen; (for this is a fact established by the testimony of the most pure and credible witnesses;) therefore there is a resurrection from the dead.

If this man were not of God, he could do nothing; but it is not true that he can do nothing; (for he has just now accomplished a stupendous miracle;) therefore he is of God.

If the earth be a plane, some edge or boundary must be discoverable: but no such edge or boundary is discoverable; (for all who have persevered in sailing continually in the same direction have returned to the longitude from which they set out without making any such discovery;) therefore the earth cannot be a plane.

Conditional syllogisms are sometimes accumulated in the form of the *Sorites.* Thus, the Apostle's argument in 1 Cor. xv. 13—19, when reduced to form, will stand as follows:

If the dead rise not, then is not Christ raised; and if Christ be not raised, our faith is vain. If our faith is vain, our hope is confined to this life; but if in this life only we have hope in Christ, we are of all men most miserable. The immediate inference is, *If the dead rise not, believers in Christ are of all men most miserable;* and the implied argument is; *But they are not of all men most miserable; (being*

alone possessed of true peace and happiness;) therefore the dead will rise: or more fully thus; *therefore our hope is not confined to this life,—our faith is not vain,—Christ is risen,—and the dead will rise.*

Again; *Si hoc natura præscribit, ut homo homini, quicunque sit, ob eam ipsam causam quod is homo sit, consultum velit, necesse est secundum eandem naturam omnium utilitatem esse communem. Quod si ita est, unâ continemur omnes et eâdem lege naturæ: idque ipsum si ita est, certe violare alterum naturæ lege prohibemur. Verum autem primum, verum igitur extremum.* (*Cic. Off.* iii. 6.)

The mathematical argument *ad impossibile* is a *destructive hypothetical syllogism,* usually founded on a premiss deduced from a *conditional Sorites.* For instance;

If a straight line drawn at right angles to the diameter of a circle at its extremity does not fall without the circle, it falls within it; if it falls within it, it may be produced till it meets the circumference; if so, a straight line from the centre to the point of meeting is equal to the semidiameter between the centre and the extremity from which the line was drawn at right angles; if so, the two lines from the centre, with the line at the extremity of the diameter, form an isosceles triangle; if they form an isosceles triangle, the angles subtended by the equal sides are equal: if equal, they are both right angles: if this be the case, two angles of a triangle are equal to two right angles: Therefore, if a straight line drawn at right angles to the diameter of a circle at its extremity does not fall without the circle, it occasions the existence of a triangle containing two angles equal to two right angles; but nothing can occasion this; therefore such a line must fall without the circle. (*Euc. El.* iii. 16.)

Every correct conditional syllogism may be reduced to an equivalent categorical syllogism.

Those which consist of one conditional and two categorical propositions are reduced to the form of

regular enthymems by the removal of the hypothetical premiss. Thus;

If the knowledge of truth is desirable, it should be sought with perseverance.

But the knowledge of truth is desirable:

Therefore it should be sought with perseverance.

If the introductory premiss be omitted, there remains this enthymem:

The knowledge of truth is desirable;

Therefore it should be sought with perseverance.

And by supplying the major premiss, *Whatever is desirable should be sought with perseverance*, a pure categorical syllogism is produced.

Again,

If no mammiferous animals are properly called fishes, then whales are not properly called fishes;

But no mammiferous animals are properly called fishes; Therefore whales are not properly so called.

Omitting the conditional premiss, the two remaining propositions constitute an enthymem; and to complete the syllogism, it is requisite only to supply the *minor* premiss; thus;

No mammiferous animals are properly called fishes:
Whales are mammiferous animals; therefore
Whales are not properly called fishes.

In the other two forms of conditional syllogisms the propositions may always be converted into equivalent categorical propositions. For example:

If absolute monarchs had no object in view but the prosperity of their subjects, their sway would be unobjectionable:

If all men were what they ought to be, absolute monarchs would have no object in view but the prosperity of their subjects:

Therefore, if all men were what they ought to be, the sway of absolute monarchs would be unobjectionable.

Which may be thus categorically stated:

That state of things in which absolute monarchs

would have no other object in view but the welfare of their subjects, would be a state in which the sway of such monarchs would not be objectionable:

The state in which all men should be what they ought to be would be a state in which absolute monarchs would have no other object in view than the welfare of their subjects:

Therefore that state in which all men should be what they ought to be would be one in which the sway of absolute monarchs would not be objectionable.

A conditional syllogism is incorrect, unless its terms may be strictly reduced to three. For instance; *If Livy is a faithful and judicious historian, we may rely on the facts which he relates; but he is a faithful and judicious historian; (for so he was esteemed by his contemporaries, who were best able to detect misrepresentations or errors of judgment, and no doubt would have so done, had he afforded them an opportunity;) therefore we may rely on the facts which he records.* That is, *If the history of Livy is the work of a faithful and judicious author, it may be received as a record of real facts: but it is the work of a faithful and judicious author; therefore it may be received as a record of real facts.* Or in the categorical form; *Whatever history is the work of a faithful and judicious author may be received as a record of real facts; but the history of Livy is the work of a faithful and judicious author; therefore, &c.* Or thus; *Every faithful and judicious historian deserves credit; Livy was such; Livy therefore deserves credit.*

Again; *If Livy is a faithful and judicious historian, we may rely on the facts which he records: but it is impossible to rely on those facts; (for some of his narratives are absurd and impossible, and others are contradicted by credible historians;) therefore he was not a faithful and judicious historian.* That is, *No writer whose narratives are not*

to be relied on is a faithful and judicious historian; but Livy is a writer whose narratives are not to be relied on; therefore Livy is not a faithful and judicious historian.

If Livy is to be believed, the Romans experienced a signal defeat at Cannæ; but he is to be believed; therefore they did experience that defeat. That is, *If that which depends on the testimony of Livy be true, it is true that the Romans were defeated at Cannæ*, &c. In which there are three terms only.

If Titus was a virtuous and patriotic emperor, his subjects must have been happy; but such he was; it may therefore be inferred that they were happy. That is; *The subjects of a virtuous and patriotic emperor are happy; the subjects of Titus were subjects of a virtuous and patriotic emperor; therefore, the subjects of Titus were happy.*

§. 2. *De Dilemmate.*

EST Syllogismus Hypotheticus Dilemma, cujus major duabus vel pluribus constat Conditionalibus; itaque duo plerumque (etsi interdum plura) proponit adversario capienda; quorum utrumvis acceperit, causâ cadet. Proprium est Dilemmati Minorem disjunctivam habere, i. e. in quâ una ex Antecedentibus affirmatur in formulâ Constructivâ, vel negatur una ex Consequentibus in Destructivâ. Tale est illud Biantis, *Si uxorem ducas formosam, habebis* κοινὴν, *communem; si deformem,* ποινὴν, *pœnam:* Necesse est autem *vel deformem vel*

formosam ducas: Necesse est ergo *vel* κοινὴν, *vel* ποινὴν *habeas:* ergo *Nulla est ducenda.*

Hoc non valet, nisi ita comparetur, ut partem alteram accipi sit necesse; utraque autem feriat; nec possit retorqueri. Quæ si vidisset Bias, suo sibi Dilemmate minus placuisset; neque enim vel formosa uxor vel deformis necessario futura est: sed est media quædam pulchritudo, quam Ennius *statam* appellavit; Favorinus eleganter *uxoriam.* Porro, nec formosa omnis est communis, nec deformis, pœna. Denique Dilemma facile retorqueri potest. Puta, *Si formosam duxero, non habebo pœnam; si deformem, non habebo communem.*

A *Dilemma* is a conditional syllogism, in which that part of the conditional premiss (whether the antecedent or the consequent) which forms the basis of the categorical premiss is disjunctive or distributive.

For example, the proposition, *If perfect virtue exists, it is to be discovered among men,* is conditional. Again, the proposition, *Perfect virtue is to be discovered amongst either the civilized or the uncivilized,* is disjunctive. But the propositions, *If perfect virtue exists, it is to be discovered either in the civilized or the savage state,* or, *If perfect virtue is not to be discovered either in the civilized or the savage state, it does not exist,* are compounded of the conditional and the disjunctive; and either of them may afford the basis of the dilemma, *But it is not to be discovered in either of these states; therefore it does not exist.*

But the dilemma further requires that each branch of the distributed premiss be separately confirmed by a prosyllogism. Thus; *If perfect virtue*

exists, it exists either among civilized or among uncivilized communities. But among the latter it is not discoverable; for all the actions of savages are regulated by that narrow self-love which induces each to gain his own ends by cruelty and injustice. Nor is there a much nearer approach to it among civilized communities; for the improvements of civilization produce only a spurious kind of virtue, which owns no better motive than mere expediency. Therefore perfect virtue is a thing which does not exist.

When it was proposed to send an embassy to Antony to induce him to raise the siege of Modena and withdraw from Gaul, Cicero among other arguments opposes the measure by this Dilemma. *Legatos decernitis? si ut deprecentur, contemnet: si ut imperetis, non audiet.* (Philipp. v. 9.) This argument may be thus analyzed:

If the proposed embassy has no prospect of success either by your entreaties or by your commands, it ought not to be sent:

But the proposed embassy has no prospect of success whether it conveys your entreaties or your commands:

(For your entreaties will be received with contempt; and your commands will be met by refusal:)

Therefore the proposed embassy ought not to be sent.

The first of these sentences contains the *Conditional proposition* with a *distributive antecedent.* The second clause (in the *constructive* form) establishes each branch of that antecedent. The third or parenthetical sentence contains two *prosyllogisms;* one in support of each branch of the previous proposition. And the last clause presents the conclusion of the hypothetical syllogism.

The whole may be categorically expressed thus:

That embassy which whether it entreats or commands has no prospect of success should not be sent;

But the proposed embassy to Antony has no prospect of success whether it entreats or commands;

Therefore the proposed embassy to Antony should not be sent.

The name implies that the members of the disjunctive consequent should be only two. It is however applied without limitation to any number of alternatives.

These observations, together with the rules laid down for hypothetical arguments in general, will sufficiently illustrate the *form* of the dilemma. The rules which relate to the *matter* of the dilemma are chiefly the three following.

1. A dilemma must be so framed that *one alternative must be admitted.* This is its *first* fundamental rule. Its entire force is lost unless the enumeration of alternatives be exhaustive, so as to form a complete logical division. Hence the use of the definite word with its correlative indefinite is peculiarly appropriate to the dilemma. The charge, *Either he restored the money entrusted to him or he is a thief*, would not be a cogent dilemma; for it might be answered, *he retained the money at the request of the owner; or in consequence of his absence.* Thus it is insufficient to say, *All companions are either profitable or pernicious.* It is also inaccurate to reason thus; *If you change your course of life, you must either be influenced by your own judgment, which is in such cases peculiarly liable to be biassed by passion or prejudice: or you must be blindly led by some indifferent or interested person, who consults his own advantage while professing to seek yours, or who to save himself the trouble of thinking gives his advice at random.* In both these instances a third alternative may be adduced. *Companions* may be simply *not injurious though not profitable. A change* may be recommended *by thoughtful and experienced advisers, deeply interested in your welfare.*

2. The *second* rule of a dilemma is, that *each alternative must exactly apply*. The following is therefore inaccurate. *If you study metaphysics, you must either follow implicitly the sentiments of some writer on the subject; and then you merely take things upon trust: or else you must trace the workings of your own mind; and then you will involve yourself in inextricable confusion.* The second alternative does not strike home, or compel assent. A man may *trace for himself the workings of his own mind,* without *involving himself in inextricable confusion.*

3. A dilemma ought to be *incapable of being retorted*. This is its *third* fundamental rule. Thus Aristotle represents an Athenian mother as endeavouring to dissuade her son from taking a part in public business by this dilemma, *Μὴ δημηγορῇς· ἐὰν μὲν γὰρ τὰ δίκαια λέγῃς, οἱ ἄνθρωποί σε μισήσουσιν· ἐὰν δὲ τὰ ἄδικα, οἱ θεοί.* To which, he observes, the young man might answer by the following retort; *Δεῖ μὲν οὖν δημηγορεῖν· ἐὰν μὲν γὰρ τὰ δίκαια λέγω, οἱ θεοί με φιλήσουσιν· ἐὰν δὲ τὰ ἄδικα, οἱ ἄνθρωποι.*

The nature of these rules proves that it requires a considerable degree of ingenuity to frame a dilemma which shall be altogether unexceptionable.

The following are instances of the *Dilemma.*

Si gravis sit dolor, brevis erit; si longus, levis; ergo fortiter ferendus. (Epicurean argument in *Cic. Fin.* i. 12. and ii. 7.) That is, *If any pain is intolerable or allows of impatience, it must be either severe pain or protracted pain; but severe pain does not authorize impatience; (for it is but transient;) nor does protracted pain authorize impatience; (for protracted pain is not violent, but slight;) therefore no pain authorizes impatience; that is, all pain should be borne with fortitude.*

Ἀλλ' ἐγὼ θαυμάζω πότερα ὡς κρατῶν βασιλεὺς αἰτεῖ τὰ

ὅπλα, ἢ ὡς διὰ φιλίαν καὶ δῶρα. Εἰ μὲν γὰρ ὡς κρατῶν, τί δεῖ αὐτὸν αἰτεῖν, ἀλλ' οὐ λαβεῖν ἐλθόντα; εἰ δὲ πείσας βούλεται λαβεῖν, λεγέτω τί ἔσται τοῖς στρατιώταις, ἐὰν αὐτῷ ταῦτα χαρίσωνται. (*Xen. Anab.* ii. 1, 8.)

Οὐ μὴ παραδώσομεν τὰ ὅπλα· ἡμεῖς γὰρ οἰόμεθα, εἰ μὲν δέοι βασιλεῖ φίλους εἶναι, πλείονος ἂν ἄξιοι εἶναι φίλοι, ἔχοντες τὰ ὅπλα, ἢ παραδόντες ἄλλῳ· εἰ δὲ δέοι πολεμεῖν, ἄμεινον ἂν πολεμεῖν ἔχοντες τὰ ὅπλα, ἢ ἄλλῳ παραδόντες. (*Anab.* ii. 1, 14.)

Tum Cæsar, si quod difficilius est id tibi reliquit Antonius, est nobis, inquit, causa cur te audire cupiamus: sin, quod facilius, tibi causa non est cur recuses. (*Cic. de Oratore* 2. *fin.*)

Did they believe what they then asserted? If they did not, they had imposed on the public; and if they did, the public ought never again to listen to such men.

Whoever contends that public discussion is not the best instructor in political transactions is either foolish, or else biassed by some private interest. He is foolish, if he thinks it possible by any other method to form a judgment of that which is still future and involved in obscurity: and he is under the influence of interested motives, if, while he wishes to persuade to some dishonourable measure, he feels himself incompetent to speak persuasively in support of that measure, but hopes by bold accusation to strike alarm both into his opponents and into his audience. (*Thucyd.* iii. 42.)

An unholy minister is the greatest of all sinners; for either he is a person of more than ordinary knowledge, or he is not. If not, he sinned greatly in undertaking that office, for which so great knowledge is requisite. If he be, his knowledge doubtless increaseth his guilt. (*Bp. Bull.*)

§. 3. *De Syllogismis Disjunctivis.*

QUÆ de *Conditionali* dicta sunt *Disjunctivæ* satis cavent. Ejus enim in Syllogismo positæ sententia *conditionaliter* efferri semper potest. Et si conditionaliter etiam *categorice.*

V. g. Si, positâ vel C vel D, subsumatur

1.	Sed C, ergo	non	D:
2.	D,	non	C:
3.	non C, ergo		D:
4.	non D,		C:

Pro expositâ Disjunctivâ dic conditionaliter.

1.	Si C, tum	non	D:
2.	D,	non	C:
3.	non C, tum		D:
4.	non D,		C.

Disjunctive propositions are compound sentences connected by disjunctive particles.

Disjunctive hypothetical propositions are compound sentences connected by disjunctive particles employed not distributively but exclusively.

The following sentences are *disjunctive* but *not hypothetical,* because the disjunctive member in each is distributive:

Studies serve for delight, for ornament, or for ability; that is, some studies serve for one of these purposes and some for another of them.

Botanical arrangements are either natural or artificial; that is, some are natural, and some artificial.

But in the following examples the disjunctive particles are exclusive, so that the admission of one

alternative implies the denial of the others. They are therefore *disjunctive hypothetical* propositions.

The botanical arrangement of Linnæus is either natural or artificial.

Either Ceres or Juno is the smallest discovered planet of our system.

Caloric is either a very subtle fluid substance, or else a vibratory affection of the particles of bodies.

Disjunctive propositions require that the enumeration should be exhaustive, so as collectively to include every possible case. The sentences, *It is either day or night; The author is either a Christian or a heathen*; are therefore liable to objection: since the time specified may be *dawn or twilight*; the author may be *a Jew or a Mohammedan*. But no exception can be made to the propositions, *It is either day or not-day. He is either a Jew or a Gentile.*

Disjunctive syllogisms are those in which a disjunctive proposition is followed by an enthymem which by affirming one branch of the disjunctive member denies the other, or by denying one branch affirms the other. It accordingly admits of four forms: as,

1. *Caloric is either a substance or a quality:*
   But it is a substance:
   Therefore it is not a quality.

2. *Caloric is either a substance or a quality:*
   But it is a quality:
   Therefore it is not a substance.

3. *Caloric is either a substance or a quality:*
   But it is not a substance:
   Therefore it is a quality.

4. *Caloric is either a substance or a quality:*
   But it is not a quality:
   Therefore it is a substance.

It is easy to reduce these to conditional syllogisms, by altering the form of the hypothetical premiss. According to the directions in the text, the disjunctive proposition in the first of the above forms may be thus expressed conditionally: *If caloric is a substance, it is not a quality.*

In the second form: *If caloric is a quality, it is not a substance.*

In the third form: *If caloric is not a substance, it is a quality.*

In the fourth form: *If caloric is not a quality, it is a substance.*

By this change *constructive conditional syllogisms* are produced. And if the conditional premises above appropriated to the first two forms, or those appropriated to the third and fourth forms, be respectively transposed, the conditional syllogisms will be of the *destructive kind.*

But there is very little utility in this process. It is more useful to observe that *disjunctive syllogisms* are reduced to *categorical* syllogisms, by removing the disjunctive premiss and completing the remaining enthymem: as,

1. *No substance is a quality; heat is a substance: therefore it is not a quality.*

2. *No substance is a quality: heat is a quality: therefore heat is not a substance.*

3. *Every thing immaterial (every not-substance) is quality; heat is immaterial; therefore heat is a quality.*

4. *Whatever is not a quality is a substance; heat is not a quality; therefore heat is a substance.*

Disjunctive syllogisms generally have the categorical premiss confirmed by a prosyllogism: as,

Virtues are either faculties, passions, or habits: But they are not faculties or passions: (for brutes, which cannot be virtuous, possess both:) Therefore they are habits.

The same argument may be expressed *conditionally*, by substituting for the disjunctive premiss either of the following: *If virtues are not faculties or passions, they are habits*; or, *If virtues are not habits, they must be either faculties or passions.*

It may also be expressed *categorically* by substituting the following in the place of the hypothetical premiss: *Those qualities of the soul which are neither faculties nor passions must be habits.*

All regal governments must be either hereditary or elective: and as I believe there is no instance wherein the crown of England has ever been asserted to be elective, except by the regicides at the infamous and unparalleled trial of King Charles the First, it must of consequence be hereditary. (*Blackst. Comm.* v. 1. b. i. ch. 3.)

Here the introductory proposition is the major premiss of a categorical syllogism in Barbara, of which the disjunctive member constitutes the major extreme; namely, *All regal governments are either-hereditary-or-elective; the English government is a regal government; therefore the English government is either hereditary or elective.* On this conclusion is founded a *disjunctive* syllogism, the categorical premiss of which is supported by a prosyllogism; namely, *The English government is either hereditary or elective; but it is not elective, (for universal testimony with a single exception declares it to be not elective,) therefore it is hereditary.*

CAP. V.

DE SYLLOGISMO QUOAD MATERIAM.

§. 1. et 2. *De Opinione.*

§. 1. HÆC de Syllogismo quoad *Formam* spectato. Jam de eodem quoad *Materiam*, h. e. *Certitudinem* et *Evidentiam* propositionum ex quibus componitur.

Certa autem propositio est, cui nihil occurrit in contrarium, vel quod occurrit instar nihili est; ut, *Omnis homo est risibilis: Evidens*, quæ simul ac percipitur assensum imperat; ut, *Totum est majus suâ parte: Dubia*, in quâ hæremus, cum illius pars utraque valde se probet intellectui; ut, *Astra regunt homines;* nam et regere et non regere videntur.

Dubitanti siquid aliud occurrat, quo pendens animus in alterutram partem propendeat, quod erat Dubium fit *Probabile.* Et potest quod probatur *Verum* esse, sed probanti tantum *Verisimile* est. Multis nihilominus assentimur isto modo, et assensui nomen est *Opinio.*

Est igitur *Opinio* propositionis *tantum probabilis;* eique nulla competit certitudo; sed in ipsâ sui ratione includit *formidinem oppositi.* Sunt Opinioni tamen *Gradus* quidam *ad certitudinem*, pro diverso pondere rationum quæ

assensum movent, diversi. Est quod omnibus, quod plerisque, quod sapientibus videtur; et quod horum singulis, quod plerisque, quod celeberrimis: quorum omnium dispar est probabilitas; quorumdam vero tanta, ut ad certitudinem quam proxime accedat.

§. 2. QUI *Opinionem* (h. e. assensum quemlibet scientiâ minorem) parit Syllogismus appellatur *Dialecticus*, Διαλεκτικὸς, i. e. probabiliter disserens: quæque proprie dicitur *Dialectica*, est pars Logicæ quæ de hoc agit Syllogismo. Multiplex autem est materia circa quam versatur opinio, et per omnes sparsa disciplinas: cujus infinitam pene varietatem ad pauca capita revocavit Aristoteles, et sub iis Effata Dialectica suis quasi in sedibus *locavit*. Hæc itaque capita Τόπους, i. e. *Locos* appellat; unde Syllogismus Dialecticus alio nomine *Topicus* dicitur.

De Locis Dialecticis et ad ea pertinentibus Effatis, sive (ut Scholastici vocant) Maximis, plura non loquor. Pro exemplo tamen hoc accipe: Inter Maximas Loci primi, qui est *Testimonium*, reperitur hæc; *Peritis credendum est in suâ arte:* ex quâ elicitur hujusmodi Syllogismus Topicus. *Quod* (Pythagoras)

Ipse dixit concedendum est: Migrare animas Ipse dixit; ergo *Migrare animas concedendum est.* Probatur Major; quia *Peritis credendum est in suâ arte.*

Opinion, or *Belief*, is founded on *Probability*. That is *really* probable which is *veri simile*; that is, which bears a greater resemblance to truth than its contradictory does. That is *apparently* or *relatively* probable, in which there *appears* or is *supposed* to exist a resemblance to truth. *Actual* or *objective* probability exists in those things in which there is no uniform or necessary cause or antecedent, but which occur ὡς ἐπὶ τὸ πόλυ, having (to speak metaphorically) a certain bias more or less strong to one of two or more different results. Thus, if a die has on each face a different number, the throwing any *certain* number in preference to another is neither probable nor improbable, but indifferent. But if it be marked on three sides with *one*, on two sides with *two*, and on the remaining side with *three*, there is an *actual* probability that the *trois* will be least frequently, and the *ace* most frequently thrown. On the other hand, the sanguine purchaser of a lottery ticket bearing a favourite number *thinks* there is a great probability of obtaining a large prize; whereas the *actual* probability is exactly the reverse. And if he has formerly obtained a large prize by a ticket of the same number, the *relative* probability, that is, his fancy or imagination as to the chance of the same result a second time, may perhaps be increased in the same ratio in which its *actual* or absolute probability is diminished.

There are an infinite number of degrees both in real and in apparent probability. And a similar variety exists in the strength of the *opinion* or *belief* produced by them. The lowest degree is *suspicion*,

doubt, hesitation, uncertainty. The highest degree amounts to *moral certainty.* For every thing, which is not strictly demonstrable, is, philosophically speaking, classed among probabilities.

It is a *slight* degree of probability which induces a person to hope for a fine day to-morrow, because it is fine to-day; or which regulates the compilers of almanacks in their weekly conjectures concerning the weather. It is a *higher* degree of probability which would lead a man to infer from the character of popery that the public worship of English protestants at Rome would not be long allowed. A *further advance* in the scale of probability is made if public report represents the English Church there as actually closed. But the probability is received as a *certainty,* when a credible friend upon the spot communicates by letter the fact of its suppression.

The proofs on which opinion or belief is founded may be either *direct* or *indirect.*

1. The *direct* foundations of assent to any thing as probable, are personal *observation* and *experience.* The rustic acts on this kind of probability when he applies a herb to stanch the blood from a wound or to reduce a swelling, because, having found it beneficial on former occasions, he expects it to be again attended with the same result. On the same principle is founded the general expectation that *the sun will rise to-morrow;* that *summer will succeed the spring;* that *April will be showery and August hot;* that *the parent will be angry when his child runs heedlessly into danger or mischief.* Under the influence of this species of probability, although of a degree approaching much more nearly to demonstration, the philosopher without hesitation deduces an universal conclusion from an accumulation of particular observations and experiments which have uniformly brought him to the same point. All in-

ductions (except those which enumerate every individual) depend on analogy, which is a species of probable or presumptive evidence.

2. The mind is influenced by *indirect* proof to acquiesce in the probability of any thing, when it infers that probability by the help of some principles already received as probable.

The most frequent and almost universal *indirect* proof of probability is *testimony*. This is the only mode by which it is possible to ascertain the probability or truth of *facts* which have not fallen under our own observation. And as to *principles* and *general conclusions*, although testimony is not the legitimate method of attaining them, yet in consequence of the shortness of life, the imperfection of our faculties, the want of opportunity, and the paramount importance of other pursuits, it is necessary, in most cases, to be satisfied with this evidence, and to rely on the fallacious maxim, *Cuique in suâ arte credendum*. Even the philosopher must often, in his own science, rely on the testimony of others; or else he will occupy his time in retracing the steps which they have previously trodden, instead of proceeding from the points to which they had attained, and thus advancing science. The student will also in many cases find it expedient to adopt some general principles in a hypothetical manner, as probabilities resting on the simple testimony of his instructor, with the purpose of subsequently submitting them to the strictest test of proof or demonstration which the subject will admit.

Those general principles, indeed, which are thus received from the evidence of others, ought not to be so admitted as if they depended on the *authority*, the *ipse dixit* of those from whom they were received; that is, as if the fact, that such was *their opinion*, were sufficient evidence of the correctness of the principle: but simply as a matter of *testi-*

mony, that a moral or demonstrative certainty has been philosophically acquired by them. Thus we do not believe the laws of gravitation because certain philosophers have asserted or held them; but because we have strong probable evidence of the historical fact, that they have proved them by an attentive and laborious induction.

The probability of facts depends on the credibility of the testimony on which they rest. The chief qualifications which render a witness credible are these:

1. That he has been an eye-witness, or has had other satisfactory means of decidedly knowing the facts.

2. That he possesses good sense and sound judgment; that he is free from a fanciful imagination, superstitious feelings, &c: and that he has that kind of knowledge which will enable him to comprehend the nature of the fact.

3. That he is a person of habitual veracity; which we may judge to have been the case if he has obtained credit among his cotemporaries, his own country and neighbourhood, his immediate successors, &c.

4. That he is free from any bias of interest or prejudice. If the testimony is opposed to his previous opinions or habits of thinking, and inconsistent with personal interest, the probability of the fact is confirmed; and still more so if the same testimony is persevered in, although dishonour, loss, pain, or death be the manifest consequence.

5. That he maintains a consistency in all the parts of his testimony; for real inconsistencies afford positive proof that some part of the testimony is inaccurate, and excite a suspicion that the whole may be so. Yet *apparent* inconsistencies should be well examined; for circumstances may separately appear opposite which in connexion with a series of events are not really so. A coincidence in the

subordinate parts and minutiæ of a narrative helps much to establish the probability of it. An apparent variance between circumstances which on close examination appear compatible, affords also a very strong confirmation to the credibility of the witness: such particulars being out of the probable reach of collusion.

If a witness in whom these qualifications exist is confirmed in his declarations by the concurrent testimony of other unbiassed and independent witnesses; if his personal enemies, or those unfriendly to the disclosure of the facts or interested in the suppression of them, corroborate his testimony; if his testimony is made public and yet not disproved or denied; all these and similar circumstances, added to the former, raise the probability to the highest degree, and entitle it to the denomination of certainty.

§. 3. *De Certitudine et Evidentiâ.*

CERTITUDO eadem videtur, quæ improprie vulgo dicitur *Evidentia Moralis;* quæque iis convenit effatis, de quibus nemo prudens dubitaverit: qualia præsertim sunt *Principia* ad vitam moresque pertinentia, cum conclusionibus quæ ab his legitime deducuntur. Nam hujusmodi propositiones videntur esse plusquam probabiles, nondum tamen evidentes: neque enim eas quisque amplectitur quamprimum apprehendit; sed iis prudens sine ullâ formidine assentitur.

Certitudo duplex est; alia *Objecti,* quæ est

rei percipiendæ; alia *Subjecti*, quæ est intellectûs percipientis. Et utrique sui sunt *gradus.* Est enim *Certius* certitudine Objecti, id cui minus obest; certitudine Subjecti, cui quod obsit minus percipitur.

Certainty, as here described, is comprehended in the term *probability* taken in the extended sense in which it has been used in the preceding observations; and is the medium between that which is commonly called by the name of probability on the one hand, and demonstration on the other. It is that highest degree of probability (in the philosophic sense) which none can doubt without folly or obstinacy: and therefore has the same practical influence as demonstration.

Physical and inductive conclusions are certain, not evident: deduced by analogy, not by demonstration. Yet men act with as much confidence on the principle, *that the harvest moon will occur at such a season;* or, *that water will rise to the level of its source;* or *that the promise of a man of veracity may be safely relied on;* as on the demonstrable facts that *the opposite angles formed by the intersection of two straight lines are equal;* or that *the radius of a circle, the chord of sixty degrees, and the tangent of forty-five degrees are equal to one another.*

The probability educed from satisfactory testimony also produces certainty. We are certain of the main facts related by Livy, abating only the casual frailties and errors to which the most accurate and judicious are liable, and the relation of prodigies in which the superstition of his age led him to place credit. Nor do a few circumstantial discrepancies between him and Polybius authorize us to mistrust either, as to the main facts which

they relate. The authenticity and the inspiration of each book of the holy Scripture depend on a train of probable proofs, which when combined amount to absolute certainty. The great and fundamental fact of Christianity, the resurrection of our blessed Lord, is not strictly speaking *demonstrated;* (for to demonstrate a past event is a contradiction in terms;) but it is established by such an accumulation of testimony as amounts to the strongest possible certainty.

Certainty is either *objective* or *subjective*. *Objective certainty* relates to the thing which is presented to the understanding and judgment. *Subjective certainty* denotes the impression made on the mind: namely, that state of mind in which it feels free from doubt on any subject. The mind often *feels* certain of that which actually is *not* certain. The influence of early associations, the authority of eminent men, the opinions of our ancestors, general consent, the lively manner in which a subject has been first brought before the judgment, too great haste and too little cautious examination in coming to a decision, as well as other causes, occasion this error of judgment.

The term *certainty,* although here limited to the objects and effect of *probable evidence*, is not usually confined to that application. There is also a certainty of *demonstration*, in matters of science; a certainty of *consciousness*, as to the feelings and operations of the mind; and a certainty of *faith*, in reference to the facts and doctrines communicated in the sacred Scripture by immediate revelation from God.

Evidentia similiter duplex est; *Objecti* nempe, et *Subjecti;* et utrique sui sunt *gradus*. Dispar enim evidentia est, prout id quod per-

cipitur vel est sponte perspicuum; vel a sponte perspicuo propius abest; vel utrumvis horum videtur.

Atque hinc, rursus, *Evidentia* multifariam dividitur. Sed nostro sufficit instituto, quod hæc, de quâ loquimur, Propositionis *Evidentia*, vel est 1. *Axiomatis* sponte perspicui; cui proinde sine ullâ probatione assentimur: vel 2. *Conclusionis* ab ejusmodi axiomatibus (*immediate* an *mediate* parum refert, modo) *rite* deductæ. Nam cum una sit Veritas, sibi constans, apteque cohærens; quodque verum, vel per se certum atque evidens sit, vel cum effatis quibusdam certis et evidentibus necessario connexum; fit, ut quamprimum apprehenditur hæc connexio, eâdem omnia quasi luce perfusa, parem (specie) consequantur assensum.

Objective evidence in the *primary* degree is a relation between any two things, so necessary and obvious, that their agreement or disagreement cannot but be allowed as soon as perceived. Such are those primary axioms, the knowledge of which is acquired from so early a process of induction, in minds unconscious of their own operations, that they are often deemed intuitive; and which neither require nor admit syllogistic proof: as, *Things which are double of the same are equal to one another.* In the *secondary* degree, it denotes the certainty of those relations which may be immediately deduced from these primary axioms: as, *The square on the hypothenuse of a right-angled-triangle is* shewn

to be *equal to the sum of the squares on the sides*, because *each of these is double of certain triangles which are equal to one another*.

Subjective evidence is the full and accurate discernment of these relations.

Many things are supposed to be objectively evident which are not so. Thus the principle, *Vox populi vox Dei*, though wholly erroneous, has been often taken as a foundation of argument supposed to be demonstrative.

§. 4. *De Scientiâ.*

QUI postremæ huic evidentiæ competit assensus apud Logicos vocatur *Scientia*. Est igitur Scientia *conclusionis certæ et evidentis*, a præmissis certis et evidentibus legitime deductæ. Certitudinem vero utramque intelligo; et utramque (tam Objecti scilicet quam Subjecti) evidentiam. Nam per Objecti certitudinem Scientia distinguitur ab *Errore;* per Subjecti certitudinem ab *Opinione*. Si desit evidentia subjecti, nulla est *Scientia;* ubi sola adest, *persuasa* tantum, non *realis* evidentia est.

Qui *Scientiam* parit Syllogismus appellatur *Scientificus;* alio nomine, Ἀποδεικτικὸς *Demonstrativus*, et interdum *Demonstratio*. Conclusiones enim certas et evidentes apud Mathematicos reperiri multas in confesso est: cumque illi, quæ docent, soleant adjuncto *Dia-*

grammate ostendere; seque propterea non rem probare, sed (quod majorem innuit Evidentiam) *Demonstrare* dicant; arcessito igitur ab illis vocabulo, *Syllogismus scire faciens* apud Logicos vocatur *Demonstratio.* Cumque in Scientiâ (siqua forte possibilitas, tamen) nullus sit erroris metus; quod hujusmodi Syllogismis, sive uno, sive pluribus probatur, id libenter agnoscimus sicut perhibetur *ita esse;* et *aliter* (saltem naturaliter) *se habere non posse.*

Demonstration consists of a syllogistic argument, or series of arguments, in which a conclusion is necessarily and evidently inferred, either immediately, or, by the interventio nof intermediate truths, from axiomatic and primary principles.

It produces *knowledge*, that is, a clear perception of and full acquiescence in the thing demonstrated. This perception and acquiescence may continue when the demonstrative process in which it originated is forgotten.

Demonstrative knowledge is *theoretically* superior to that acquiescence which is called *certainty*, and which proceeds from the highest class of probable proofs. In practice however it is often found, that as strong a conviction is produced by these, in the subjects to which they are appropriate, as by demonstration. We may practically be as fully and as justly convinced of the authenticity of the holy Scriptures, as of the equality of the angles of an equilateral triangle.

§. 5. *Demonstrationis species.*

DUÆ sunt Demonstrationis species. Prima, quæ demonstrat Ὅτι, sive *Quod res sit;* probando, vel simpliciter et directe *rem ita esse,* et tum vocatur *Ostensiva,* seu potius *Directa;* vel si *non sit,* absurdi aliquid necessario secuturum. Hæc est quæ Græce dicitur Ἀπαγωγὴ, Latine, *ducens ad absurdum, impossibile, incommodum,* uno verbo recte dixeris *Obliquam.* Exemplum ejus dat reductio Syllogismi a *Baroko* vel *Bokardo* ad *Barbara.*

Ostensiva Directa fit duobus modis.

1. Quando aliquid demonstratur per *Effectum;* ut si diceres, *Luna Soli opposita nigra cernitur;* ergo *patitur Eclipsin.* 2. Quando per *Causam remotam;* ut si idem colligeres quia *Sol et Luna diametraliter opponuntur.* Quod si illud demonstrares per *Causam proximam,* quia nempe *Terra inter Solem et Lunam interponitur,* tum fieret

Secunda Demonstrationis species Διότι, i. e. quæ docet *Quare,* vel *Propter quid* res sit; causam ejus assignando, non quamcunque, sed *proximam* seu *immediatam.* Sic enim statuunt Logici quod *Scientia* omnis est *Cognitio rei per causam,* sed *proprie dicta* per *propriam,* h. e. *proximam:* nam per remotam *Cur sit* aliqua-

tenus ostenditur: nihil amplius quam *Quod sit* demonstratur.

Utriusque Speciei membra gradu differunt. Nam obliqua ὅτι est deterior directâ, quia non demonstrat *rem ita esse,* nisi quâtenus docet *eam aliter se habere non posse;* quod tametsi eodem redeat, tamen animo minus satisfacit; nam si par sit utrobique Certitudo, hujus tamen minor Evidentia est.

Habet et Διότι suos gradus; quia potest esse causa proxima quæ non est *prima,* h. e. per se nota et indemonstrabilis: cujus ideo præfertur Evidentia, quia (contra quam cæteræ) suâ luce est conspicua, et nihil indiget alienâ. Quare, quæ hanc adhibet causam demonstratio, et habetur, et nominatur *Potissima.*

Sunt igitur ex mente Logicorum Demonstrandi quatuor modi; quorum alter alteri evidentiâ, adeoque dignitate, præstat. *Valet* Demonstratio obliqua; *Potens* est quælibet Directa; *Potior* quæ per causam proximam, *Potissima* quæ per primam demonstrat. Hujus est vulgata illa Definitio, *Syllogismus constans veris, primis, immediatis, notioribus, prioribus, et causis Conclusionis.* Exemplum, nisi forte apud Mathematicos, an uspiam occurrat nescio.

1. Of the first general class of demonstrations, (namely, those which prove ὅτι, *that the thing is,*) the

least evident is the Ἀπαγωγὴ, that is, *indirect* proof, or argument *ab impossibili;* so called because it evinces that *the thing is,* by displaying some manifest contradiction, absurdity, or impossibility as necessarily accompanying the supposition that *the thing is not.* This method should never be employed, except when no direct mode of proof is practicable. Several of the properties of circles are thus demonstrated by Euclid; see book iii. prop. 1, 2, 4, 5, 6, 9, 10, 11, 12, 13, 16, 18, 23, 27; and the last propositions comprehended in prop. 7 and 8. Such arguments are indeed incontrovertible; but the subjective evidence produced by them is not so great as that which proceeds from direct demonstration, and consequently they do not affect the mind with equal satisfaction.

2. *Demonstration of the fact* (ὅτι) when *direct,* may be either *a priori,* or *a posteriori.* The latter, however, ought not to be introduced under the head of *demonstration,* in the sense in which the word is here used, namely, as consisting in a deduction of truths from premises either axiomatic or demonstrated. It is most adapted to physical or moral proof; thus, when a phenomenon or a fact is admitted or proved by sufficient testimony, the cause, or necessary antecedent to that fact or phenomenon, is manifestly inferred: as, the sight of an eclipse affords proof of the relative position of the earth, the sun, and the moon.

3. Demonstration *a priori* is twofold: it infers the conclusion either by means of some *remote cause;* and then it is considered as proving no more than the fact, and thus belongs to the *former* general class of demonstration, namely, the ὅτι: or by means of the *immediate cause;* and then it is considered as more evident, and as constituting the *second* class of demonstration; namely, the διότι. If this immediate cause be an axiomatic principle,

the evidence is conceived to be brought to the highest possible degree.

The term *cause* is here employed, not in its common signification, as denoting *that which produces or effects any thing*; but simply, for *that which we conceive to be prior to another thing in the order of nature, and without the existence of which that other thing could not exist.* The two senses are often coincident, but the latter comprehends the former as the genus of the species. Thus the intervention of the earth between the sun and the moon is, in both these senses, the cause of a lunar eclipse; but the parallelism of the opposite sides of parallelogram is, in the latter sense only, a cause of the equality of the opposite sides and angles.

The terms *demonstration, knowledge, evidence,* &c. are vaguely employed, not only in common usage, but even by philosophical writers. They are often applied to the proofs and the belief of things *probable.* And where the probability is of the higher order, no inconvenience arises from such application of the words. It is only of importance in the study of each author, to ascertain as nearly as possible in what sense he is in the habit of using them. This is necessary to avoid ambiguity and misapprehension.

CAP. VI.

DE METHODO.

§. 1. *Methodi Species et Regulæ.*

METHODUS est talis dispositio partium alicujus disciplinæ, ut integra facilius discatur. Estque duplex. 1. *Inventionis*, quæ disciplinæ præcepta invenit; 2. *Doctrinæ*, quæ tradit. Prior procedit a sensibilibus, et singularibus, quæ sunt *nobis notiora*, ad intelligibilia, et universalia, quæ sunt *notiora naturâ:* posterior, contra.

Method is by some writers considered to form a *fourth* branch of Logic. Of those who object to this arrangement, some comprehend it under the head of *reasoning;* others conceive it to be a species of *judgment;* while others, with a greater degree of accuracy, suppose it to belong to the operation of *apprehension.* Bacon suggests that it should be esteemed a distinct and independent science.

The chief objects of method are, *the investigation and discovery of truth;* and *the communication of discovered truth.* There are accordingly two species of method, respectively adapted to these two objects. The former is called the method of *discovery;* the latter, the method of *instruction.* The former proceeds from things relatively best known: the latter often, but not necessarily, the reverse. In physical and metaphysical subjects the things

relatively best known are individual things, the knowledge of which is either conveyed to the mind by means of the external senses, or excited by acts of consciousness, or imperfectly acquired by means of analogies derived from sensible objects.

Methodus Doctrinæ duplex est. *Perfecta*, ἀκροαματική; et *Imperfecta*, ἐξωτερική. Perfecta rursus, vel *Universalis* est, quâ integra disciplina, vel *Particularis*, quâ aliqua disciplinæ pars docetur.

It is expedient to adapt the method of communicating truth to the state of the recipients. Those whose minds are prepared by previous study and acquaintance with similar topics, will admit of a more scientific and recondite arrangement than the illiterate. To the former, the *perfect*, *esoteric*, or *acroamatic* method may be better adapted; the latter require the use of a *popular*, *exoteric* method, even though it be scientifically less perfect. The ancient philosophers are supposed to have frequently adopted the *esoteric* form for the sake of excluding from knowledge all besides their own favoured followers.

Utraque duplex est:

1. *Compositoria* sive *Synthetica*, quæ inservit disciplinis Theoreticis; et a notione *Subjecti* incipiens, principia ejus et species investigat, donec a summo genere in istâ disciplinâ perveniat ad infimam speciem. 2. *Resolutoria* sive *Analytica*, quæ inservit disciplinis Prac-

ticis; et a notione *Finis* incipiens, subjectum, et tandem media investigat.

The names *analysis* and *synthesis*, which are employed to denote the two chief branches of logical or scientific method, are borrowed from the sciences which are conversant with material objects; in which the application of those words involves no obscurity. In other sciences there is often much difficulty in correctly appropriating the two terms; especially as it frequently occurs that the same method may, in different points of view, be considered either synthetic or analytic. The terms themselves are also used by some writers in so vague a manner as to convey a sense almost opposite to their real signification.

Nor is it necessary that every treatise should follow exclusively either the *analytic* or the *synthetic* system. On the contrary, it is often convenient to adopt the opposite methods in different parts of a treatise on the same science or branch of science.

1. *Analysis* consists in the resolution of a compound into its component parts.

The *analytic method* therefore commences with complex substances or notions, and reduces them first to *more* simple, and then, if possible, to the *most* simple and *primary* constituent substances or notions.

Since therefore all the objects which first present themselves to our senses, and all the notions which first affect the mind, are necessarily complex; and our earliest acquisitions in knowledge consist in separating and classifying the ingredients or parts of such objects and notions; it follows that the analytic method is first in the order of actual experience, and is usually the method of discovery or

invention. It begins with those things which are most known. It first ascertains their respective properties and relations, and then, either actually or mentally, separates, arranges, and classifies them; comparing or contrasting them with each other and with those of other objects; and tracing back consequents to their antecedents and effects to their causes. It thus proceeds by a path opposite to the course of nature, until it arrives (in reference to objects of sense) at simple or undecompoundable substances; or (in reference to subjects of metaphysical apprehension) at the most abstract ideas; or (in reference to matters of science in general) at universal principles or laws.

This is in fact the process already described under the name of induction. (p. 224—237.) Thus it is observed that *heat* exists in the rays of the *sun*, in *culinary* and *subterraneous fire*, in *solids* or *liquids* exposed to the influence of fire, in *animal bodies*, &c. By repeated examinations and comparisons, the accidents of heat, (which are discovered by their existence in some things which contain that quality and their absence from others, and by the comparative degrees of heat in different substances,) are separated from those things which, being discovered to be uniformly present with it, are supposed to be essential to it. Hence is ultimately derived the definition of *heat*. The definition is necessarily the last step, since it expresses the nature of the thing, the discovery of which was the object of the analysis; or at least, the nearest *approximation* to that nature, which the state of the science or the limited powers of man can attain.

Again, the chemist *analyses* atmospheric air, water, &c. and reduces them to their principles or primary substances or gases.

The metaphysician *analyses* the notions conveyed to his mind through the medium of the senses by individual objects, while he compares them, forms

to himself an artificial notion of the qualities which any number of them possess in common; proceeds further to decompose that idea, and so on successively until he has reached that which he deems the most simple apprehension. That is, he proceeds from the individuals to the lowest species; from this to the proximate genus, and so on through the subalternate genera until he arrives at the highest or most abstract genus; each process of the analysis bringing him to a less complex or more simple notion.

Thus the law of optics, that *the angle of reflection is equal to the angle of incidence*, is derived from the observation of many facts, each of them comprehending many other circumstances; for instance, that the light proceeded from the sun or a lamp; that the incident ray proceeded from a tower or a post; that the reflecting substance was a river or a mirror; that the refracted ray was ascertained by its meeting a human eye, or by its illuminating an opaque substance. But the philosopher by *analysis* separates all these constituent parts of the facts under examination, and fixes his attention on that one particular, the equality of the angle of incidence and reflection; from which he deduces the general law above stated.

Again, the practical geologist discovers the various strata of the earth under a great variety of circumstances, as to thickness, extent, nearness to the surface, obliquity, &c. But by pursuing the analytical method he deduces general laws as to the order and succession of the several strata; and from the phenomena which attend them, considered as effects, he acquires a probable conjecture of their origin and the causes of their relative position and qualities.

Thus moreover, if we would analytically acquire an acquaintance with the science of mineralogy, we may enter on a personal examination of all the

earths, and stones, and metals, &c. which we can discover; scrutinizing distinctly their various properties and characteristics; classifying them by placing together those in which there exists a striking similarity; reviewing the classes, and rearranging them according to more comprehensive similarities; and so on repeatedly, until we arrive at certain classes of the most general nature, with the laws of their locality, formation, combinations, gravity, fusibility, crystallization, &c.

2. The *synthetic method* is the reverse of the analytic. It commences with that which is most simple, and following the process of nature, consists in combination. It lays down simple truths or general axiomatic principles, and proceeds from them to derivative and complex truths. It begins with such mental objects as are most abstracted; and traces them successively in the various aggregates of which they form part.

Thus, to recur to the examples above given; a treatise on caloric may begin with stating its simple nature as a *subtle fluid substance partaking of such and such qualities;* or, *as a vibratory affection of the particles of matter distinguished by such and such characteristics;* (according to the theory which the author judges most probable;) and then proceed to shew the subjects in which caloric is discoverable, its symptoms, effects, &c.

Again, a system of chemistry may be introduced by the description of the pure gases and other elementary substances, and thence proceed to the various combinations found in nature.

The metaphysician may, in like manner, begin with the definition of *Entity;* and then, adding to that simple idea the notions of dependence or independence, explain the complex notions of *substance* and *quality*, and so on, until he arrives at the aggregate of ideas comprehended in the lowest species,

or the still more complex notion of the several individuals belonging to each species.

So a system of optics may naturally commence with definitions and axioms, or the simple principles ascertained by induction: and proceed by the application of them to propositions dependent on them, and from these propositions to others successively demonstrable by means of them.

The geologist introduces his subject with general remarks on the structure of the earth and the character and order of the strata, together with a statement of the hypotheses on which his system is founded, which he illustrates by those examples from which he had first begun his series of discoveries, and derived those very principles.

The teacher of mineralogy may in like manner begin with the simple character of minerals as to form, structure, mode of fracture, gravity, &c. may thence proceed to the elements of minerals; then to the enumeration and description of the species of minerals in their pure state; and lastly, to their mixed state as actually found in the ore. In pursuing this course he arrives by synthesis at those complex objects which formed the commencement of his analytic examination and the source of his subsequent discoveries.

It appears then that the original discoverer of any science, or the philosopher who desires to improve it by fresh discoveries, must adopt the *analytic* method. But in communicating the science to others, either method may be adopted. The *analytic* has some advantages, inasmuch as it makes the student a partaker, as it were, in all the interest of the discovery. But the *synthetic* mode is more universally adapted for this purpose, as it displays the whole science at one view, and produces conviction in a manner less laborious, and conse-

quently better suited to the generality of those who wish to acquire the science.

Geometrical analysis and synthesis are not in their nature different from physical or metaphysical analysis and synthesis. The analytical mode in geometry consists in commencing with a proposition which is ascertained by trial to be true in a complex form; that is, in some individual cases; and, on the presumption of its being universally true, discovering what principles can be appealed to in its proof; tracing one step after another until the mind arrives at some known principle, the truth of which proves the correctness of the hypothesis. Thus if, without previous information, any one should perceive that in several practical instances the three angles of a triangle have appeared to be equal to two right angles, and should be desirous to ascertain whether that equation may be subsequently relied on as uniformly correct, he would perhaps observe that the production of one side of the triangle forms with the adjacent side angles equal to two right angles, one of which is one of the angles of the triangle. He would infer that if the outer angle could be proved equal to the two others, his hypothesis would be established. If previously acquainted with the properties of parallel lines, he would soon discover a method of so dividing the outer angle, that one portion should be equal to one of the remaining angles of the triangle, and the other to the other. Or if instead of producing a side, it should occur to him to draw a straight line through one angular point parallel to the subtending side, he would discover three angles which are together manifestly equal to two right angles, of which one is an angle of the triangle, and the other two evidently shewn, by the previously known properties of angles formed

by parallel lines, to be equal to the other angles of the triangle. In communicating this proof, he might retain the same *analytical* method, retracing thê process of his mind in the discovery; or he might reverse the order, and state the demonstration *synthetically;* which (except in the occasional arguments ab impossibili) is the method adopted by Euclid in his Elements.

Regulæ Methodi generales hæ sunt. In tradendâ disciplinâ 1. Nihil desit aut redundet. 2. Singulæ partes inter se consentiant. 3. Nihil tractetur quod non sit subjecto aut fini homogeneum. 4. Singulæ partes aptis transitionibus connectantur. 5. Præcedat in docendo, sine quo alterum intelligi non potest, ipsum vero sine altero potest.

1. Correct method will equally avoid *deficiency* and *redundancy.*

Cicero complains of *deficiency* in the method adopted by Panætius, (*Off.* i. 3. see p. 72, 73.) and records a similar charge brought against him by Antipater Tyrius, for the omission of *health* and *property* among *things useful.* (*Off.* ii. 24.) Aristotle in the introduction of his Rhetoric comments on the omission, by former writers on the subject, of that in which the essence of the art consists, namely, *proofs.*

On the contrary, needless repetitions, and enlarged discussions on those parts of a science which are obvious, incur the charge of *redundancy.*

Too great a number of divisions and subdivisions, though they give an appearance of acuteness, are seldom free from redundancy: as, on the other hand,

the custom of reducing every thing to dichotomies must be the occasion of great imperfection and deficiency; unless the strictest attention is paid to make one term of each division, in fact if not in form, the mere exclusive of the other.

2. The divisions should be collateral, or immediately belonging to the same genus. Thus it would be absurd to adopt the following method for a treatise on Logic: 1. *Of Simple Terms;* 2. *Of Judgment;* 3. *Of Categorical Syllogisms;* 4. *Of Hypothetical Syllogisms*, &c. The last two classes are of a subordinate rank to the two former. The third head should be *of Syllogisms;* of which those two should form subdivisions. See Cicero's comment on Epicurus's division of *desires*, page 72. and the observations on page 73. in relation to the arrangement of his treatise *de Officiis*.

3. Digressions, even though they may be interesting in themselves, are injurious to the unity of a treatise. In some cases they are unavoidable; but they should then be as brief as is consistent with perspicuity, and the transition to the leading topic should be distinctly marked. Otherwise the mind is distracted, and the train of argument or of narrative is obscured. Even illustrations should be employed with caution, lest they draw off the thoughts from the main subject. The use of notes at the bottom of the page or at the end of the work requires the same cautions as that of digressions in the body of a work. They break the thread of the text, and destroy much of the enjoyment if not of the benefit to be derived from the regular and uninterrupted discussion of the subject.

4. There should be a mutual dependence or natural sequence of the parts; each bearing a closer connexion with that immediately preceding it than

with any other. The form of transition, as to the mere expression, is a matter of taste and expediency. It is more elegant when one part appears to glide naturally into another. But an abrupt transition is often better adapted to secure perspicuity.

5. Whatever is essential to the knowledge of any topic must precede that topic. To this rule every other must yield, as is most fully illustrated in the instance of mathematics. A slight explanation of the constituent parts of propositions and syllogisms is introduced in this treatise by anticipation, (page 12—16.) in conformity with this rule.

§. 2. *De Methodo Mathematicâ.*

IN tradendis disciplinis suis Mathematici hâc utuntur methodo. 1. *Vocum significationem* constituunt: h. e. *Vocabula artis* suo quodque loco sic definiunt, ut legem sibi statuant iis nusquam uti, præterquam in eo sensu quem explicat definitio. 2. Definitionibus subjungunt *Axiomata*, quas et κοινὰς ἐννοίας vocant; h. e. effata sponte perspicua, quibus in decursu operis utendum vident. 3. Posthæc adjiciunt *Postulata*, quæ ad praxin spectant; suntque per se certa et evidentia; quæ proinde sine probatione concedi suo jure *postulant*. 4. Hisce positis, propositiones demonstrant; ordine, et, quoad fieri potest, affirmate: unâ lege contenti, ut, quicquid demonstratum eunt, ex ante datis

vel probatis manifestum faciant. Cætera, in quibus methodi præceptores multi sunt et odiosi, non morantur.

Mathematicorum methodum in cæteris artibus et scientiis, si tenere non liceat, æmulari certe licet. Quo ad hanc quæque proprius accedit, eo cæteris perfectior, et ad docendum aptior videtur. Sed ad ea quæ docentur retinenda, nihil est utilius absoluti operis conspectu; in quo, ea quæ sunt ante (extra ordinem fortasse) demonstrata, suis quæque in locis, h. e. servatâ Logicorum methodo, reponantur.

Mathematicians lay the foundation of their subsequent demonstrations, first, in *definitions*, which, while their primary object is simply to fix the signification of the terms employed, serve at the same time as *artificial* principles; and then, in certain *natural* principles, of which some are practical, called *postulates;* and others theoretical, which are called *axioms.*

The order of propositions (as for instance in Euclid) is partly natural, partly arbitrary. It is probable that any one who should independently discover the same truths, would arrange them very differently, and yet perhaps not less scientifically.

A synoptic arrangement of mathematical conclusions according to their subjects and relations is a profitable exercise. The theorems of the first book of Euclid, for example, might be thus arranged:

1. Of Lines and Angles, ...	11 Cor. 13. 14. 15. and Cor. 1.2.
2. Of Parallel lines, ...	27. 28. 29. 30. 33.
3. Of Triangles in general: viz.	
general properties,	20. 18. 19. 17. 16. 32.
special properties,	5. 6. 5 Cor. 6 Cor. 47. 48.
..... in relation: viz.	
equal and similar, ...	8. 4. 26. 34.
equal, ...	37. 38. 39. 40.
unequal or dissimilar,	7. 21. 24. 25.
4. Of Parallelograms in general,	34. 46 Cor.
.... in relation: viz.	
... mutually, ..	35.36.43.47.48.
... to triangles, ...	41.
5. Of Rectilineal figures in general,	32 Cor. 1. and 2.

The attempts which have been made to apply the mathematical method to other sciences have not generally proved successful.

APPENDIX

DE SOLUTIONE SOPHISMATUM.

§. 1. *De Argumentis Investigandis.*

CUJUSCUNQUE Syllogismi difficultas ad duas Species revocari poterit; alteram, quæ in *Argumenti Materiâ*, alteram, quæ in *Formâ* consistit: nam qui has duas expedire noverit, is in *tertiâ*, quæ ex *ambarum complexione* oritur, non hærebit.

Si inciderit *Materia* difficilis, *unicum* huic malo *remedium* est, disciplinam unde desumitur argumentum, fideliter didicisse; quod ut facias, *Instrumenti* operam tibi Logica præstabit; sed ulterius nihil confert. *Proprium* illi *munus* est syllogismi *formam* explorare; h. e. *utrum conclusio ex præmissis consequatur propter ipsum colligendi modum:* Sed an ponendæ sint præmissæ (nisi forte sint pure Logicæ) aliunde discendum est. Sicubi autem Syllogismus qui legitimus non est, videatur tamen; aut contra; (quorum utrumque sæ-

pissime, et de causis pene infinitis accidit) formalem ejus consequentiam excutere est Artis Logicæ.

Qui hoc opus aggreditur, id sibi negotii datam sciat, ut difficilem suum syllogismum, primo in categoricum purum, vel in plures, si opus sit, convertat; tum ad canonem accurate exigat; cujus operis ratio præcedente libro p. 139. et seqq. abunde declarata est. Summa rei huc redit. Consideranda est primo Conclusio; ejusque Termini solerter distinguendi: Prædicatum enim est Major Terminus Syllogismi; qui proinde Præmissam quoque Majorem indicabit; Subjectum pariter Minorem; et in utrâque sese offeret Argumentum sive Terminus Medius: Unde et si desit Præmissarum alterutra, facile suppleri poterit. Hisce cognitis, nec Figura Syllogismi, nec Modus latebit; qui si legitime, nec tamen vere concludere videatur, quærendum annon anceps sit aliquis trium Terminorum: nam si in iis nulla lateat ambiguitas, necessario falsa erit altera Præmissarum.

Hunc in modum licebit Syllogismum quemvis Categoricum purum explorare: qualis si non sit qui proponitur, quam facillime fiet, per ea quæ priore Libro, extremo Capite tertio, et toto quarto sunt ostensa. Siquid amplius restet, id exemplis melius quam præceptis docebitur.

In examining the force and accuracy of an argument, the first step is to acquire a clear and definite understanding of the *question* to be proved; and laying aside whatever is added for the purpose of illustrating or enforcing it, to express that question as simply and briefly as possible. The entire argument should then be retraced, so as to discover with precision what is the notion which affords the hinge, as it were, of the argument, or the term of comparison with the two extremes of the question. When this is ascertained, it remains to reduce the premises to the form of a regular Syllogism. In so doing it will frequently be found that only one of the premises is actually expressed; and that even that expressed premiss is intermingled with matter which is merely illustrative; or that it is so vaguely expressed as not to suggest to the mind, on the first consideration, its real bearing, being only glanced at rather than actually stated; or that some sentence implying the intended premiss, or intended as confirmatory of it, (and thus supplying the place of a prosyllogism,) is substituted for the premiss itself.

When the argument has been thus reduced to form, its validity must be ascertained by an application of the principles already laid down and illustrated.

§. 2. *De Fallaciarum Speciebus.*

ORDIEMUR autem a facillimis; nempe veterum Sophistarum *Fallaciis;* quarum 13 species enumerat Aristoteles: novem, quæ *multiplicitate dictionis;* quatuor, quæ aliquo *extra dictionem* vitio laborare videntur. Et erat

aliqua fortasse difficultas in earum aliquibus, juxta veterem disputandi (h. e. interrogandi) morem propositis; sed profecto nemo tam obtusus est, qui non easdem Syllogistice propositas agnoscat statim, et derideat. V. g. Erit fortasse qui rogatus, *Quod non amiserit utrum habeat necne?* non intelligat se captum iri, sive simpliciter habere se, sive non habere responderit: at proposito hujusmodi Syllogismo, *Quod non amisisti habes; Cornua non amisisti; Ergo habes:* vel *Quod non amisisti non habes; Oculos non amisisti; Ergo non habes:* quid reponat nemo non videt.

A *Fallacy*, *Sophism*, or *Paralogism* is an apparent Syllogism, which assumes the form of genuine argument; but has no real validity, because the supposed conclusion is not actually deducible from the premises. Those premises *may* be true; and the conclusion *may* also be true; but the conclusion is not so implied in the premises as to render *its* truth a necessary result of *their* truth. Consequently the sentence does not represent a genuine act of reasoning.

Many such fictitious arguments arise merely from the misapplication of *words*. These constitute the class called *Fallacies of expression or of diction*, or *Verbal Fallacies*. Others depend on some concealed error or defect in the *matter* of the argument, and are therefore technically denominated *Fallacies independent of the diction*, or *Real* or *Material Fallacies*.

SOPHISMATA

- *In Formâ Argumenti,* (Sicubi Conclusio non legitime consequatur ex Præmissis.)
  - *Propter Colligendi Modum aperte vitiosum.*
    1. Medium non distributum.
    2. Quatuor Termini.
    3. Illicitus Processus. [Syll. Reg. Gen.]
  - *Propter Medium Anceps.*
    - *Ex Voce per se Æquivocâ.*
      1. Fallacia Æquivocationis.
      2. Fallacia Accentûs seu Prosodiæ.
      3. Fallacia Figuræ Dictionis.
    - *Ex Structurâ.*
      4. Fallacia Amphiboliæ.
      5. 6. Fallacia Compositionis et Divisionis.
      7. Fallacia Accidentis.
      8. Fallacia a dicto *secundum quid* ad dictum *simpliciter.*
      9. Fallacia plurium Interrogationum.
- *In Materiâ Argumenti,* (Sicubi legitime nec tamen vere concludere videatur Syllogismus.)
  1. Fallacia Ignorationis Elenchi.
  2. Fallacia a non-Causâ pro Causâ.
  3. Fallacia Consequentis.
  4. Fallacia Petitionis Principii.

The division into *Verbal* and *Material* Fallacies is by no means clear and satisfactory. The two classes are so nearly allied to each other, that in many cases the same fallacy may be arranged in either of them. The seventh, eighth, and ninth classes, for instance, here (more appropriately) enumerated as *fallacies of diction*, are classified by Aristotle and most subsequent writers among the *fallacies extra dictionem*.

The subordinate classification is also open to objection. It may be doubted whether the catalogue is sufficiently copious to include every fallacious argument. And it is often difficult to ascertain under which class any particular fallacy should be located. This difficulty, however, often arises, not from the fault of the enumeration, but because the argument actually comprehends more than one kind of error. And the object of the classification is not merely to attain a scientific arrangement, but to excite the mind to vigilance by rendering it previously aware of the more prevalent methods of fictitious reasoning.

§. 3. *Fallaciæ Dictionis.*

FALLACIÆ *dictionis*, (extra eas quas supra, p. 145, 151, 155. indicavimus,) sive ex *ancipiti* Medio Termino natæ, novem esse videntur.

It has been already shewn, (pages 147, 151.) that ambiguity, either in the middle term or in either of the extremes, destroys the validity of a Syllogism. Most of the *Fallacies of diction* are merely instances of that ambiguity under different forms.

1. Fallacia *æquivocationis,* sive nata ex voce *æquivocâ:* ut, *Canis est animal; Sirius est canis;* Ergo, *Sirius est animal.* In hoc quatuor sunt termini; quorum duo, vox *Canis* æquivoce sumpta.

The term *fallacy of equivocation* is not confined to those fictitious arguments which involve a word absolutely equivocal; but comprehends every argument in which the same word is employed in different shades of sense. The use of a word in two different, although analogous, senses, when the sentence professes to speak of the same thing, is actually an equivocation.

A sophism arising from this error is involved in the argument, *Every priest must have a real sacrifice to offer: but the appointed administrators of the word and sacraments of Christ are priests: these therefore must have a real sacrifice to offer.* For the word *priest* in the major premiss applies only to the ἱερεὺς or offerer of sacrifices: whereas the same word in the minor premiss denotes the perfectly distinct office of the πρεσβύτερος or presbyter of the Christian Church. The apparent analogy between them, (inasmuch as they both denote the ministers in sacred things,) tends to confirm the misconception occasioned by the homonymy.

This species of fallacy cannot be well exemplified by arguments expressed in short sentences, and in a form approximating to that of a regular syllogism. For under these circumstances, the absurdity is usually so manifest, that the mind is ready to infer that none could be misled by sophisms of so gross and palpable a character. It is in the course of lengthened discussion, that a change in the application of a word or expression is tacitly introduced; while the delusion is concealed from the careless or unpractised reader or hearer, by the circumstance that the same

word is employed throughout; and most frequently, not in a manner which can strictly be called equivocal, but only with a slight modification of meaning.

"It would require," says Burke, "a long disclosure to point out the many fallacies which lurk under the generality and equivocal nature of the terms *Inadequate Representation.*" A similar observation may be made concerning a great number of words in common use, as *Liberty*, *Emancipation*, *Expediency*, *Pleasure*, *Patriotism*, *Sacrament*, *Conversion*, *Christian*, &c. The word *Church* has often been made an instrument of delusion, while in one part of the apparent argument it has been employed to denote *the universal Church of Christ;* and in another part to signify *a local division of that universal Church.* Lucretius enumerates the evils arising from *Religio,* in the sense of *Superstition,* and thence infers the absurdity of *Religio,* in the sense of *reverence and worship offered to a superior Being.* Even in such writers as Plato and Aristotle inadvertent transitions of this kind occasionally occur: as in the use of the words, αἰδὼς, *shame*, *modesty*, or *self-respect:* λόγος, as applied to a *word*, a *sentence*, a *definition*, *reason*, *regard:* σωφροσύνη, as applied to *temperance*, *prudence*, *sound judgment:* πίστις, *credence*, *confidence*, *fidelity*, *persuasion*, *proof:* ἀρετὴ, *excellence*, *valor*, *moral virtue*. The inaccuracy may frequently be detected by transferring the passage into some other language, in which the same analogies and associations are not attached to the same words. Thus the circumstances of Greece were such as would naturally almost identify in the minds of the inhabitants the notions of *state*, and of *city:* so that it is not surprising to find, in the course of the same argument, the word πόλις so employed, that in one place the former of those notions, and in another place the latter, may be more prominent.

It does not, however, follow, that every such transition creates a fallacious argument. The

varieties of meaning in which a word is employed may be related to each other as a part to a whole; and thus the meaning in one place may be comprehended in the more extensive application in which it is used in the other place; in the same manner as a limited or particular term, is comprehended in the same term when distributed. Thus an inference concerning πόλις, as denòting *a city*, or as meaning *a commonwealth*, may sometimes be legitimately drawn from a premise in which that word was employed in the entire complex signification which it represented to an Athenian mind, namely, *a city-state:* or *a state consisting of a city with its dependencies.* The word ψυχὴ in like manner conveys the complex sense of *life* and *soul:* and Plato has sometimes, without violating the soundness of his argument, glided from one of those applications to the other. Of a similar transition an instance occurs in the language of our blessed Lord in St. Mark viii. 35—37. If the word διαθήκη in the ninth chapter of the Epistle to the Hebrews is rightly understood to signify a *will or testament*, the transition may be accounted for in the same manner; this being a specific sense comprehended in the general notion of *engagement.* But it is probably more correct to understand this word, wherever it occurs in the New Testament, as uniformly denoting *covenant.*

2. Fallacia *Accentûs* seu *Prosodiæ* potius, quando pro eodem sumuntur quæ vel Literâ, vel Spiritu, vel Tempore, vel Accentu sunt diversa: ut, Est *servus*, Ergo est *cervus;* Est *ara*, Ergo est *hara.* Est *malum* (an apple), Ergo *malum* (an evil). Venatur *lépores*, Ergo et *lepóres:* quibus qui falli potest, debet.

The Fallacies of this kind, being founded on mere similarity of sound or of spelling, are for the most part too trifling to deserve notice. Instances in abundance may be derived from the comedians of all nations. Thus, the poet, ridiculing the imperfect utterance of Alcibiades, says, Ὁ Θέωρος τὴν κεφαλὴν κόρακος ἔχει· . . . . ἔχει (ἄρα) τὴν κεφαλὴν κόλακος. (Aristoph. Vesp. 45.) So the punster pretends to draw his inference concerning the *air*, or the *sun*, or a *horse-chesnut*, from premises in which he had previously employed the word *heir*, or *son*, or *chesnut horse*.

3. Fallacia *Figuræ dictionis*, quando propter dictiones similes, quod de uno datur de altero arripitur; e. g. Mercurius κοινὸς, ergo et κοινωνικός.

This class of fallacies scarcely deserves to be distinguished from the preceding. The difference is, that the *Fallacia prosodiæ* depends on the use of words which resemble each other in sound only; this depends on words which resemble each other in their real or pretended etymology.

Thus Lucretius found it convenient to represent *Animus* and *Anima* to be so nearly allied, that whatever he supposes himself to have proved concerning either of them may be inferred concerning the other.

Of this character is the absurd inference of the sanctity of the *mouse*, (μῦς,) under the supposition that the term expressive of the most sacred rites (μυστήριον) is deduced from it. Or that because τιμὴ is an object of universal desire, so also is τίσις. Or that because Philoxenus is well known as a *Virtuoso*, no one can suspect him of not being a man of *Virtue*. Such also is the frigid plea of Ajax, that his name authorized him καὶ δὶς αἰάζειν καὶ τρίς.

And of the same nature is the mock-argument of Richard the Second as to the character of those around him, when to the order given, "Go some of you: *Convey* him to the Tower;" he answers,

"O Good! *Convey! Conveyers* (that is, *robbers*)
"are you all,
"That rise thus nimbly by a true king's fall."

Demosthenes is said to have converted the ridicule of an Athenian audience into applause by an allusion of this kind. He had inaccurately accented the antepenultima of Ἀσκληπιός· Ὤμνυε τὸν Ἀσκληπιὸν, observes Plutarch, προπαροξύνων Ἀσκλήπιον· καὶ παρεδείκνυεν αὐτὸν ὀρθῶς λέγοντα· εἶναι γὰρ τὸν θεὸν ἤπιον. (*De Dec. Orat.*)

This and the preceding species of fallacy are combined in Aristophanes, (Vesp. 39—41.) where Sosius, in describing his dream, says,

Εἶθ' ἡ μιαρὰ φάλαινα ἔχουσα τρυτάνην
Ἵστη βόειον δημόν.

(*Then the vile whale was holding a pair of scales, and weighing some beef-suet.*) From which Xanthus deduces the inference,

Οἴμοι δείλαιος·
Τὸν δῆμον ἡμῶν βούλεται διϊστάναι.

(*She wants to excite divisions in our republic.*) The ambiguous use of δημὸς, *fat*, and δῆμος, *the people* or *popular government*, is a fallacy *of accent* or *prosody:* the transition from ἵστη to διϊστάναι is a fallacy *figuræ dictionis.*

4. Fallacia *amphiboliæ;* sive nata ex sententiâ *amphibolâ,* h. e. ancipitis structuræ; ut, *Quod tangitur a Socrate illud sentit; Columna tangitur a Socrate;* Ergo *Columna sentit.* Vox *sentit,* non sponte, sed in *hâc structurâ* est *ambigua;* cujus vi, in Majori significat *Sentit*

Socrates; in Conclusione, *Sentit Socratem:* Quare Syllogismus habet quatuor terminos.

The Fallacies of *ambiguous construction* are not less absurd than those of the three preceding classes: and yet, like those, are often so disguised as to delude the hearer. For instance; let it have been stated that *The prisoner only committed an assault on the plaintiff.* The context, or the tone in which the statement was made, might show that the sentiment intended was, that *the prisoner was alone in committing the assault:* and it would be a fallacy if it were attempted to infer that *he did no more than commit the assault, and was not guilty of robbery or murder.* But if the connexion shewed the original intention to be, that *the prisoner merely assaulted the defendant without proceeding to any further injury:* it would be a fallacy to infer that *he had no accomplices in the assault.*

Aristophanes represents Euripides as bantering Æschylus by the inferences which he pretends to draw from his ambiguous expression, Ἑρμῆ χθόνιε, πατρῷ' ἐποπτεύων κράτη. (*Ran.* 1156 *sqq.*)

The Greek sophists delighted to shew their ingenuity by such fictitious arguments as the following:

Ὃ σὺ φῂς εἶναι, τοῦτο σὺ φῂς εἶναι· φῂς δὲ λίθον εἶναι· σὺ ἄρα φῂς λίθος εἶναι.

Εἰ ἐνδέχεται ἐπίστασθαι, ἐνδέχεται ἐπιστήμην ἔχειν· ἀλλ' ἐνδέχεται ἐπίστασθαι γράμματα· ἄρα ἐνδέχεται τὰ γράμματα ἐπιστήμην ἔχειν.

A simple translation, (if indeed they can be translated,) suffices for the exposure of such futilities. In the former of these examples the sophist means to imply, *What you assert yourself to be, that you assert to be: But you assert a stone to be: Therefore you assert yourself to be a stone.* The fallacy turns on the ambiguity of the Greek idiom σὺ φῂς εἶναι, which equally signifies, *You assert (any*

thing) *to be or exist;* and *you avow yourself to be* (*any thing*). In the second example the play is on the ambiguity of ἐνδέχεται ἐπίστασθαι γράμματα; which presents the obvious meaning, *It is possible to know the letters*, or *to be acquainted with literature;* but may grammatically bear the application, *It is possible for letters to have knowledge.*

5. et 6. Fallacia *Compositionis*, ubi datum in sensu diviso sumitur in sensu composito: ut, *Duo et Tria sunt par et impar: Quinque sunt Duo et Tria;* Ergo *Quinque sunt par et impar.* Fallacia *Divisionis*, quando datum in sensu composito sumitur in diviso; ut, *Planetæ sunt septem: Sol et Luna sunt planetæ;* Ergo *Sol et Luna sunt septem.* Utroque modo quatuor sunt termini si aperte loquaris. V. g. Prioris Syllogismi mens est, Duo et Tria *seorsim accepta* sunt par et impar; Quinque sunt duo et tria *in unum composita*, &c. Posterioris vero; Planetæ *collective sumpti* sunt septem; Sol et Luna sunt planetæ *distributive sumpti*, &c. Unde duplex utrobique Medius.

These two species of fallacy are the converse of each other. In the fallacy of *combination* the same term is taken, first, in a *distributed* sense, and then in a *collective* sense. In the fallacy of *division*, the argument contains the word first employed in a *collective* or *combined* application; and subsequently in a *divided* or *distributed* application.

1. The following parody on a legal decision affords an instance of the *fallacy of combination. If black and white horses are devised, pied horses*

shall pass by such devise: but black and white horses are devised; therefore the plaintiff shall have the pied horses. The middle term is ambiguous in consequence of a transition from the distributed to the combined sense. The real premises are, *Both black horses and likewise white horses are bequeathed; but pied horses are horses conjointly black and white.* They contain therefore four distinct terms.

An argument of this character has already been adduced, (p. 223.) *The New Testament is not the production of Apostles or their cotemporaries; for it was first issued by a council held three hundred and sixty-four years after the death of the oldest of the Apostles.* The infidel reasoner loses sight of the fact, that each of the sacred books had been long before *separately* published, and argues from the period of the official enumeration of the canon of the New Testament, as the date of their *united* publication.

2. The *fallacy of division* may be illustrated by the following examples:

The favourers of aristocracy were in power in Athens at the close of the Peloponnesian war: But Plato and Xenophon were favourers of aristocracy: Consequently they must have had political power at that period. The middle term in the major premiss is *the aristocratic party collectively:* in the minor premiss a different term is substituted by the use of the same word in a *distributed* or *divided* sense, as denoting *some persons attached to that party.*

The works of Pindar consisted of Dithyrambics, Pæans in honour of the gods, Encomiums on departed heroes, and Epinician odes: But the poems now existing under his name do not comprehend all those topics: therefore those poems are not the works of Pindar. Here the major extreme occurs in the premiss in a *collective* sense, *all the works of Pindar together;* and in the conclusion in a *distributive* sense, for *any of the separate works of Pindar.*

Holy Scripture contains all things necessary to

salvation: but the book of Psalms is Holy Scripture: that book therefore contains all things necessary to salvation.

The Christian Church is universal and indestructible: The Syrian Church at Travancore is a Christian Church: therefore the Syrian Church at Travancore is universal and indestructible.

In both these examples the middle term is first used *collectively, in sensu composito;* and is then assumed *partitively* or *in sensu diviso.* (See the observations on collective propositions, pages 102 and 104.)

7. Fallacia *Accidentis;* quando *accidentarium* aliquod confunditur cum eo quod est *essentiale* seu principaliter intentum: ut, *Quod emisti comedisti; Crudum emisti;* Ergo *Crudum comedisti:* in quo *Quod emisti,* et *Quale emisti,* confunduntur; unde quatuor termini.

It is obvious that many things may be predicated of any subject which cannot be predicated of every circumstance in which that subject is found, or of every quality, relation, or other adjunct connected with it. It must therefore be erroneous to argue from a term taken simply, to the same term modified by any such appended circumstance. This kind of sophism is called a *fallacy of the accident;* because it applies to the accident that which is true of the subject only.

Seneca (Epist. 48.) affords a ludicrous example of this fallacy. "*Mus syllaba est; mus autem caseum rodit: syllaba ergo caseum rodit.* Sine dubio verendum est nequando in muscipulâ syllabas capiam; aut nequando, si negligentior fuero, caseum liber comedat. Nisi forte acutior sit ista collectio: *Mus syllaba est; syllaba autem caseum non rodit:*

mus ergo caseum non rodit. O pueriles ineptias!" In the first of these pretended syllogisms the middle term *mus* is used in the major premiss in its simple sense; (*mus caseum rodit;*) but in the minor premiss it is used only in an accidental sense as denoting the word, not the thing meant by the word.

Lady A. was married to a commoner: but Lord A. is not a commoner: therefore Lady A. was not married to Lord A. The subsequent elevation to the peerage was but an adjunct which did not interfere with the identity of the person.

Henry the Fifth insulted the Lord Chief Justice: but Henry the Fifth was a King of England; therefore a King of England insulted the Lord Chief Justice. The major premiss is true of the person who was subsequently *Henry the Fifth, King of England,* but is not true of him *as* King of England.

8. Fallacia *a Dicto secundum Quid ad Dictum Simpliciter;* quando proceditur a voce determinate sumptâ, ad eandem absolute positam: ut, Τὸ ἄγνωστόν ἐστι ἐπιστητὸν ὅτι ἄγνωστον, Ergo Τὸ ἄγνωστον ἐπιστητὸν: unde quatuor esse terminos necesse est.

This class of fallacies is the converse of the preceding. It is exemplified in the latter of the two mock-arguments above quoted from Seneca: in which the word *mus* in the minor premiss (*mus est syllaba*) is a *dictum secundum quid;* but in the conclusion it is intended to be taken in its simple and customary sense.

A similar fallacy would be employed if, from the statement, *Cicero knew Fabius Maximus to have been a consummate general,* it were attempted to infer that *Cicero was personally acquainted with Fabius Maximus.* The words, *Cicero knew Fabius,*

taken *simply*, would convey this meaning; but no such inference can be rationally deduced from the words as they stand in the entire sentence.

Ἔστιν ἡ ἀρετὴ ἕξις προαιρετική· ἡ δὲ ταχυτὴς τοῦ ἵππου ἐστὶν ἀρετή· ἔστιν ἄρα ἡ ταχυτὴς ἕξις προαιρετική. In the minor premiss the word ἀρετὴ is used in a *special relation*, or *secundum quid*. But the conclusion is drawn as if it had been used, as in the major premiss, in its simple and absolute sense.

Aristotle says, Ὁρίζονταί τινες τὰς ἀρετὰς ἀπαθείας τινὰς καὶ ἠρεμίας· οὐκ εὖ δὲ, ὅτι ἁπλῶς λέγουσιν, ἀλλ᾽ οὐχ ὡς δεῖ, καὶ ὡς οὐ δεῖ, καὶ ὅτε, καὶ ὅσα ἄλλα προστίθεται.

The soul is in relation to the body what melody is to a musical instrument; but when the instrument is destroyed the melody ceases: therefore the soul cannot survive the body.

To infer any thing contradictory to the divine declaration, *I am the Lord: I change not;* from the passages of holy Scripture in which God is said to *repent*, or says, *Ye shall know my change of purpose;* would be a fallacy of this class.

It is equally erroneous, and on the same ground, to infer that *All oaths are prohibited in Scripture*, because our blessed Lord and his Apostle have said, *Swear not at all.* For the context shews that the precept is not given *simpliciter*, but *secundum quid:* that is, it is limited either to the case of common conversation, or to the profane substitution of created things in the place of the supreme God as the object of appeal.

Again; the sentence, *The children of this world are wiser in their generation than the children of light*, is a *dictum secundum quid;* and therefore will not authorize the indefinite assertion that *irreligious persons have more wisdom than the true Christian.*

To infer the universal restoration of the ungodly at the last day, from the sentence, *Then shall every man have praise of God*, would involve

a similar fallacy. For it would employ in an *absolute* and *universal* sense an assertion which the context shews to be *dictum secundum quid;* that is, limited to the *faithful stewards of the mysteries of God.*

Τιμωρία οὐκ εὐτυχεῖ δικαίως, ὅτι καὶ ἀδικεῖται· οὐδὲ ἰσχὺς βέβαιον, διότι καὶ εὔελπι. (Thuc. iv. 62.) To insinuate from these expressions that Hermogenes *absolutely* asserted that *The attempt to repel an enemy never meets with just success*, and that *strength is never to be relied upon*, would be a misrepresentation: because the assertions are qualified: he merely warns his hearers that *The fact of having received injury does not of itself secure a just result to any attempt at retaliating against the aggressor:* and that *strength is not necessarily efficacious merely because its possessor is sanguine of success.*

If it is said, *I will not speak because he bids me: I will not submit to examination before an illegal court:* the refusal *to speak*, or *to submit to examination*, are *secundum quid;* in reference to a particular motive, or under some particular circumstance. It would therefore be unfair to infer that the speaker had *absolutely* and *simply* refused *to speak* or *to submit to examination.*

9. Fallacia *plurium interrogationum*, quando plures quæstiones velut una proponuntur. Evertitur, ad singulas quæstiones distincte respondendo ; sicut fecit Menedemus Eretriensis qui roganti eum Alexino, *Numquid patrem verberare desiisset? Nec verberavi*, inquit, *nec desii.*

This fallacy consists in putting a question which is simple in form, but in sense implies more than

one. Its object is to make the respondent appear to betray his own cause, either by answering one portion of the question only, so as to involve an acknowledgment of the insinuation contained in the other part: or by giving so vague an answer as may expose him to the charge of equivocation or falsehood. If counsel says to a witness, *Well, Sir, how long is it since you got out of prison?* the answer adapted to rebut the innuendo would, like the question, be complex; *I never was in prison, and therefore never had occasion to come out of prison.* But an inexperienced person might be so confused by the insidious form of the question, and the unexpectedness of such an enquiry, as to dwell on the expression *got out of prison,* and thus leave the erroneous impression that he had been imprisoned. On the other hand, one who had been in prison might be so anxious to shew that he had been legally liberated, in opposition to what he might suppose to be implied in the expression, *got out,* as plainly to betray the fact that he had been there.—*What is the character of your acquaintances?* is a complex question. The answer, *They are virtuous and respectable,* would be overthrown by an ἔλεγχος, if a single exception could be adduced. *They are of bad character,* is an answer which few would give, even if it were the fact. *Some of them are good and some bad,* would meet the question, but would not obviate the innuendo. The insinuation would be repelled and the fallacy annulled, if some such reply as this could be given: *The majority of my acquaintance are persons of unexceptionable character: and although through the unavoidable intercourse of business, or from want of discernment of their real character, I may have become acquainted with some unworthy persons, I have broken off that acquaintance as soon as I discovered what they really were.*

§. 4. *Fallaciæ extra dictionem.*

FALLACIÆ *extra dictionem*, sive ex Argumenti Materiâ natæ sunt quatuor.

1. Fallacia *Ignorationis Elenchi*. *Elenchus* proprie Syllogismus est adversarium redarguens; confirmando scilicet quod illius sententiæ contradicit. Quare in hanc incidit Fallaciam qui se putat adversarium redarguere, non servatis *Contradicendi Legibus*, (de quibus vide pag. 115.) Qui in his peccat, docendus est se nescire Quid sit Contradicere.

The word ἔλεγχος signifies a *refutative* syllogism; or an argument which *convicts* of falsehood the conclusion of an opponent. It is also employed to denote the *conclusion* of a refutative syllogism; that is, the proposition which contradicts the opposed question, or in any other way evinces its falsehood. It bears the latter signification in the term *Ignoratio Elenchi.*

This expression therefore, in its strictest sense, denotes the unintentional use of an argument the conclusion of which does not actually involve the falsehood of the question which it was intended to disprove.

But the name has practically acquired a more extensive signification. It is applied to every argument which fails to prove or to disprove the exact question under discussion: whether the fallacy be the result of ignorance or of intention.

Thus, if the question is, *Whether any wars are justifiable;* the ἔλεγχος to the affirmative proposition,

that *Some wars are justifiable*, would be that *No wars are justifiable:* and this must be the conclusion of any valid argument advanced by the opponent. But if he argues that *Jehosaphat was reproved for joining with Ahab in war with Ramoth-Gilead:* or, that *Wars most frequently originate in injustice, and are carried on under the influence of hatred and ill-will;* he falls into this fallacy of *ignoratio elenchi.* For he only proves that *Some wars are not justifiable;* and either is not aware, or hopes his hearers will not be aware, that this proposition does not contradict the original statement, that *Some wars are justifiable.*

The argument of Cleon (in Thucyd. iii. 37.) loses sight of the ἔλεγχος, when, in support of the sanguinary decree against the inhabitants of Mitylene, he says, Πάντων δὲ δεινότατον εἰ βέβαιον ἡμῖν μηδὲν καθεστήξει ὧν ἂν δόξῃ πέρι· μηδὲ γνωσόμεθα ὅτι χείροσι νόμοις ἀκινήτοις χρωμένη πόλις κρείσσων ἐστὶν, ἢ καλῶς ἔχουσιν ἀκύροις. His argument proves that the established laws of a country should not be wantonly changed or violated: but this by no means disproves the expediency of rescinding a rash and cruel ψήφισμα.

The plea of the cavillers mentioned by St. Peter, involves the same fallacy of irrelevant argument. "Where is the promise of His coming? for since the fathers fell asleep, all things continue as they were from the beginning of the creation." The proposition which the objector professes to refute is that *Christ shall come to judgment.* But he only lays down the fact that *He is not yet come;* which is not at all inconsistent with the assurance that *He is to come.*

To a petition presented to the House of Lords it was objected, that it was signed by lads from the factories, and by all who could scribble their names; and if persons could not write, a person at the table wrote for them. The reply was to this effect; "Of the respectability of some of the parties I can posi-

tively speak. One of them is a Banker of immense fortune and most respectable character. Two others have at different times represented the county. I have therefore satisfactorily shewn that the petition was not signed by such persons as the noble Lord has described." By no means. The assertion that some respectable persons had signed it, is no contradiction to the assertion that it was signed by others of an opposite character.

A disputant gains much advantage to his own cause if he is able to detect an irrelevancy of conclusion (or *ignoratio elenchi*) on the part of his opponent. For instance:

"The Honourable Member has spent his own time and that of the House to no purpose. He has with much labour proved that it would be both unjust and inexpedient to require of all candidates for office the declaration which he describes. But if he had looked into the Bill which he undertakes to oppose, he would have discovered that no such declaration is therein contemplated."

So also Archidamus charges the Athenians with overlooking the question to be combated. *Τοὺς μὲν λόγους τοὺς πολλοὺς τῶν Ἀθηναίων οὐ γιγνώσκω· ἐπαινέσαντες γὰρ πολλὰ ἑαυτοὺς, οὐδαμοῦ ἀντεῖπον ὡς οὐκ ἀδικοῦσι τοὺς ἡμετέρους ξυμμάχους καὶ τὴν Πελοπόννησον.* (Thuc. i. 86.)

In like manner Diodotus charges Cleon with *ignoratio elenchi. I allow*, he says, *the truth of what Cleon has proved; namely, that the Mityleneans deserve indiscriminate execution. But he has mistaken the question: which is not, whether they deserve death, but, whether it is expedient for us to inflict it.* (Thuc. iii. 44.)

A remarkable instance of *ignoratio elenchi*, joined also with a *fallacia æquivocationis*, occurs in the following passage of Locke. He professes to disprove the rule, "that no syllogistical reasoning can be right and conclusive, but what has at least one

general proposition in it:" that is, that *no inference can be deduced from two particular premises*; (see page 161.) He argues thus: "As if we could not reason and have knowledge about particulars: whereas the immediate object of all our reasoning and knowledge is nothing but particulars. . . . So that the perception of the agreement or disagreement of our particular ideas is the whole and utmost of all our knowledge . . . Universality is but accidental to it . . . But the perception of the agreement or disagreement of any two ideas, consequently our own knowledge, is equally clear and certain, whether either or both, or neither of these ideas be capable of representing more real beings than one, or no." First, he employs the word *particular* in the colloquial sense of *singular*, instead of the logical and correct application. And then, misled by his own mistake, he supposes that he overthrows the position which he controverts: whereas the conclusion which he draws, namely, that *two singular premises may be conclusive*, is quite consistent with the statement that *no reasoning is conclusive which has not at least one universal*, (or, as he calls it, *general*) *proposition in it*; because singular propositions are virtually universal.

2. Fallacia a *non-causâ* pro *causâ*; sive sit a *non-verâ* pro *verâ*; sive a *non-tali* pro *tali*. Ut *Cometa fulsit*; Ergo *Bellum erit*; Nullo modo; nam si fuerit, aliis de causis futurum est. *Quod inebriat prohibendum est*; *Vinum inebriat*; Nequaquam vero, sed *abusus vini*. Hæc Fallacia bene solvitur negando causam falsam; melius, adducendo germanam.

This fallacy is of frequent occurrence. It is occasioned sometimes by ignorance; but more frequently by the desire to prop up a weak cause, or to detract from the influence of its opponents.

Bishop Latimer complains of the use of this fallacy for the purpose of throwing discredit on the Reformation. "It is not, he says, we preachers that trouble England: but here now is an argument to prove the matter against the preachers. *Here was preaching against covetousness all the last year in Lent, and the next summer followed rebellion; therefore preaching against covetousness was the cause of the rebellion.* A goodly argument!" He illustrates this style of argument by the answer of an old man to the Commissioner appointed to discover the cause of the accumulation of the Goodwin Sands. "Forsooth, Sir, I am an old man. I think that *Tenterden steeple is the cause of the Goodwin Sands.* For I am an old man, sir, and I may remember the building of Tenterden steeple: and I may remember when there was no steeple at all there: and before that Tenterden steeple was in building, there was no manner of speaking of any flats or sands that stopped the haven. And therefore I think that Tenterden steeple is the cause of the decay and destroying of Sandwich haven."

The Athenian orators continually employed this mode of fallacious argument, by insinuating against each other the charge of bribery. To attribute motives is indeed a favourite practice of disputants in all ages and countries. For example: "It is evident that the opposition to this measure is vexatious. It is merely the effect of jealousy on the part of Honourable Members who are longing for office, but feel it to be out of their grasp. It is impossible therefore to place any reliance either on their facts or their arguments."

The friends of Job were misled by this fallacy,

when they inferred from his afflictions that he had been guilty of hypocrisy.

Fallacies of this class may be rebutted, first by a denial of the fictitious cause or motive; and then, by a statement of the real motive; supported, if the case admits of it, by some evidence or proof. Let it, for example, be urged, "There is no ground whatever for hearing counsel on the present occasion: unless indeed your Lordships want to defeat the Bill by delay." The answer might be thus: "The noble Lord should have avoided charging the House with a desire to create delay in proceeding with this measure. For although the evidence had been so few days on their Lordships' table, they had evinced an anxiety to proceed with the greatest celerity consistent with safety. Their real object was, by allowing the petitioners to be heard by counsel, to extend equal justice to all."

The inspired writer anticipates a fallacy of this character, by asking, "Was then that which is good made death unto me?" He opposes those who would impiously infer that *the law was the cause of death*, first with his emphatic denial, μὴ γένοιτο· and then with the counter-statement of the true cause; *It was sin which had wrought death in him.* (Rom. vii. 13.)

One of the pretended *Acta Cæsaris* promulged by Antony was a law which gave to certain persons accused of political offences the right of appeal to the people. Cicero urges that the freedom of the subject by appeal was not the genuine object of the law, but was *non-causâ pro causâ.* "Quasi vero id agatur, ut quisquam provocet! Id agitur, id fertur, ne quis omnino istis legibus reus fiat. . . . . Non igitur provocatio ista lege datur: sed duæ maxime salutares leges quæstionesque tolluntur." (*Phil.* i. 9, 22.)

To this class of fallacies belongs the practice so frequently resorted to in self-defence, the substitution of the *occasion* for the *cause.* Such were the unholy

pleas by which it was attempted to palliate the guilt of the first sin. "The woman whom Thou gavest to be with me, she gave me of the tree, and I did eat.... The serpent beguiled me, and I did eat." Such also was the implied argument of Ahab when he thus addressed himself to the prophet, *Art thou he that troubleth Israel?* To which the prophet answers, first, by denial, and then by assigning the true cause: "I have not troubled Israel, but thou and thy father's house, in that ye have forsaken the commandments of the Lord, and have followed Baalim." (1 Kings xviii. 17, 18.)

3. Fallacia *Consequentis*, quando infertur quod non sequitur: ut, *Animal est; Ergo, Est Homo*. Hic memineris, quod si recte ratione uti volumus, Consequentia aut directa, immediata, formalis, aut plane nulla est; peccat enim contra aliquam Dialecticæ regulam; ad quam si provoces, refelletur.

This fallacy is familiarly called a *Non-sequitur*. It consists in stating the position which the disputant wishes to establish in the form of an inference derived from some apparent premises with which it has no real connexion. The more closely the premises and the pretended conclusion are connected in sense, the less liable the fallacy is to be discovered. This fallacy may in most cases be otherwise explained; namely, as a real conclusion drawn from a false premiss.

The following argument is a non-sequitur. *The Epistle to the Hebrews was not written by St. Paul, because it contains many topics and forms of expression which do not occur in any of the acknowledged writings of that Apostle.*

Again; *The newly-discovered treatise De Repub-*

licâ ascribed to Cicero cannot be his; because it contains topics and words no where found in any of the works previously known as his.

There is no *consequence* or mutual connexion between the conclusion and the expressed premiss. Yet to the proposer of the argument there *appears* to be a connexion, because he has assumed the false principle that *every author will confine himself in all his works to the same topics and modes of expression.* Equally faulty are the following instances:

"Seven is a sacred number: the recurring period of especial devotion is the seventh day: the sacred season of the Jewish Jubilee was the seventh year: the seventh Jubilee was a period of peculiar privilege: seven loaves were miraculously distributed among the multitudes; and the same number is marked with peculiar distinction on many other occasions. Who then can reasonably hesitate to admit that there must be seven sacraments in the Christian Church? Or how can we listen to those who pretend that there are more than seven primary planets belonging to our solar system?"

"Quoniam est animi natura reperta
Mobilis egregie: perquam constare necesse est
Corporibus parvis et lævibus atque rotundis."
Luc. iii. 204.

"Forgers of money and other disturbers of the state are justly punished with death; therefore also heretics, who are forgers of the faith, and, as experience testifies, grievously disturb the state, are justly punished with death."

Again: When the Athenians in their customary strain of vanity claimed confidence and respect on the ground of the exploits of their ancestors, Archidamus urges that their argument was a *fallacia consequentiæ* or a *non-sequitur.* Καίτοι εἰ πρὸς τοὺς Μήδους ἐγένοντο ἀγαθοὶ τότε, πρὸς δ' ἡμᾶς κακοὶ νῦν, διπλασίας ζημίας ἄξιοί εἰσιν, ὅτι ἀντ' ἀγαθῶν κακοὶ γεγένηνται. (*Thuc.* i. 86.—see also iii. 67.)

This *fallacy of consequent* is often calculated to mislead when applied to reciprocal arguments; as those derived from cause and effect, &c. It is justly inferred that *Davus is an injurious member of society, because he is a drunkard.* But it cannot be reciprocally inferred that *he is a drunkard, because he is an injurious member of society.* It is true that *Every equilateral triangle is equiangular:* and that *All triangles which have their corresponding sides respectively equal have equal areas.* But it would be a fallacy to infer that *Every equiangular triangle is equilateral;* and that *All triangles of equal areas have their respective sides equal.* The latter of these propositions is false. The former is true; yet it does not follow from its converse, but requires distinc tproof.

4. Fallacia *Petitionis Principii*, cum ut datum assumitur, quod probatum oportuit. V. g. Cum probatur aliquid vel per seipsum, (quæ vocatur *Petitio statim,*) ut, *Homo est*, Ergo, *est Homo:* Vel per Synonymum; ut *Ensis est acutus;* Ergo, *Gladius:* Vel per æque ignotum; ut *Hic est Pater Melchisedek;* Ergo, *Hæc Mater:* Vel per ignotius; ut, *Hoc Quadratum est hujus Trianguli duplum*, Quia *huic Circulo æquale:* Vel per Circulum; resumendo scilicet quod relictum est; ut si diceres, *Ignis est calidus*, Ergo *urit;* et post pauca, *Ignis urit*, Ergo *est calidus.*

The *Petitio Principii* is a fallacy of extensive application. As its name imports, it consists of the gratuitous assumption of an unproved and therefore

doubtful principle. The conclusion deduced from such a premiss must be as uncertain as the foundation on which it rests.

The various instances of this fallacy may be comprehended under three classes.

1. The most simple form of the *Petitio Principii* is when the ἀρχὴ or assumed premiss is such as *may possibly* be true; (and if true, the argument founded on it is valid:) but neither is self-evident, nor has been proved; and therefore is such that it may be doubted whether it can be proved. This is what the Schoolmen call a proof *per æque ignotum, vel per ignotius.* For example:

The inhabitants of the planet Herschel, being endued with natural sensations similar to our own, must suffer intensely from the extremity of cold. The principle that *the inhabitants of Herschel are endued with natural sensations similar to our own* is *begged*, that is, gratuitously assumed without proof or the possibility of proof.

Such arguments will frequently be ascribed to a *false premiss.* For it is difficult to distinguish between that which is *not proved to be true,* and that which is *actually untrue.* An *unproved proposition* may be conscientiously advanced by a disputant, while he is not aware of its doubtfulness, but supposes it true: and it may be with equal conscientiousness opposed by another, under the supposition that it is false. For the term *doubtful* does not refer so much to the *objective uncertainty* of the principle, as to the *relative uncertainty*, depending on the degree of real or supposed knowledge of the parties.

Moreover, if the objector deems the premiss to be absolutely false, it is often more advantageous to treat it as doubtful, because this may be more easy to prove than the other.

In the following example there occurs a twofold *petitio principii.* The first consists in the unproved assumption which Lucretius lays down in his first book as if it was an undeniable axiom, *Tangere enim et tangi nisi corpus nulla potest res.* The second consists in taking for granted that *the influence of mind or body is produced by material contact.*

"Denique concidere ex Animi terrore videmus
Sæpe homines, facile ut quivis hinc noscere possit
Esse Animam cum Animo conjunctam: quæ cum Animi vi
Percussa est, exin corpus propellit et icit.
Hæc eadem ratio naturam Animi atque Animai
Corpoream docet esse: ubi enim propellere membra,
Corripere ex somno corpus, mutareque voltum
Atque hominem totum regere ac versare videtur;
(Quorum nil fieri sine tactu posse videmus:
Nec tactum porro sine corpore;) nonne fatendum est
Corporeâ naturâ Animum constare, Animamque?"
Luc. iii. 157—168.

The argument of the Jews, "If He were not a malefactor, we would not have delivered him up unto thee," is a gross *petitio principii.* They assume for their major premiss, *No man delivered to trial by men of such high principle as we are can be innocent.* This position could not be otherwise received by Pilate than as problematic and *unproved:* and the result proved it to be false.

Again, the address of the Pharisees, "Give God the glory: we know that this man is a sinner;" implied the argument: *No sinner could have accomplished this miraculous bestowment of sight; He to whom you ascribe it is a sinner: therefore he could not have accomplished it.* The subject of the miracle could not immediately ascertain whether the minor premiss was true or false: but he felt that it was unproved. He therefore treats the argument as

a *petitio principii*, and answers, "Whether He be a sinner or no I know not, &c." But further consideration convinces him that the premiss was absolutely false; and he boldly pleads, "We know that God heareth not sinners . . . If this man were not of God, he could do nothing."

In common language, the use of a premiss avowedly false, or the recurrence to one which has been previously disproved, is called by the name of *petitio principii*. See, for instance, Chillingworth's "Religion of Protestants," chap. v. §. 25.

2. The second class of fallacies under this head consists of those in which the premiss assumed is identical with the conclusion. The premiss is in this case necessarily unproved and doubtful, because it is the very question for which proof is required. And the argument is worthless, because no proposition can prove itself. This branch of the petitio principii is most correctly termed *Begging the question*. Of this kind are the following examples:

The world never had a beginning: for there never was a time when its existence commenced.

The equitable adjustment of property by the diminution of interest is so just a measure, that no person who is not blinded by prejudice can close his eyes against its propriety. For no one can be in any degree injured by it. Nor need any thing further be advanced to produce conviction that the proposal is consistent with the most strict and impartial justice. Here is a twofold *petitio principii*. The one consists in the pretended argument, *no one can be injured by it;* which is only stating the same thing in other words. The other consists in the surreptitious introduction of the word *equitable* in the description of the subject, which anticipates the very point which ought to be proved.

Omnis orator est vir bonus; namque citra virtutem dicendi peritia intelligi non potest. The pre-

miss and the inference are so nearly equivalent, that the former is little different from a variety of expression for the latter.

An arguer will often endeavour to make his opponent appear guilty of this fallacy. And it may also occur, that in consequence of the different degrees of general discernment, or of acquaintance with the subject under discussion, those propositions will appear to one person almost identical, between which another may perceive a real distinction.

Such a deficiency of discernment appears to have characterized a writer who quotes the argument, "This action was a most virtuous one; therefore the man who performed it deserves to be highly commended for it;" adding the comment, "Here *virtue* and *that which deserves to be commended* are in fact two names for one and the same thing, and therefore the argument is a *petitio principii.*" Surely it may be more truly replied, that *virtue*, and *that which deserves commendation*, are *distinct* things; and therefore the argument is not incorrect.

Hooker complains of similar unfairness, when he inferred from the godliness and profitableness of the ceremonies of the Church of England, that they ought to be retained. "If," he says, "we being defendants do answer that the ceremonies in question are godly, comely, decent, and profitable for the Church, their reply is childish and unorderly, to say that we demand the thing in question, and shew the poverty of our cause, the goodness of which we are fain to beg that our adversaries do grant." This practice of charging an opponent with fallacy without proving the truth of the charge, may be considered one of the most frequent and most mischievous fallacies. With respect to the petitio principii, such a charge frequently arises from the want of distinguishing between real identity (whether concealed under difference of expressions, or the conversion of the propositions, or both unitedly) and that vir-

tual comprehension of the conclusion in the premises which necessarily exists in every genuine argument.

3. The remaining class of the fallacies which come under the denomination of the *petitio principii* is that which is commonly called *arguing in a circle.* This occurs when, in a series of arguments, that which had previously been inferred from any principle or fact is subsequently adduced in proof of that same principle or fact.

"The argument that heavy bodies descend because they have gravity, and again that gravity is a quality by which heavy bodies descend, is an impertinent circle and proves nothing." (*Glavill.*)

This argument, *The exterior angle of every triangle must be greater than either of the two interior opposite angles separately, because it is equal to both together:* may in itself be sound and valid. But to one who has acquired the knowledge of the theorem, that *the external angle is equal to both the opposite interior angles together,* by the process by which Euclid proves it, the argument would be a *circle.* For he has first proved on independent principles that *the exterior angle is greater than either of the interior opposite angles;* and by this (through an intermediate process) arrives at the further truth of *its equality to the two conjointly.*

Atque hæ sunt tredecim Sophismatum formulæ veteribus usitatiores, quæ tironibus Logicis in exemplum proponi solent.

§. 5—10. *De Rationibus Inexplicabilibus.*

§. 5. SOPHISMATIBUS ex sententiâ veterum accensendæ sunt *Inexplicabiles* (ut vo-

cantur) *Rationes*, quas Megarici, Stoici, aliique Eristicam professi, propriis nominibus insignivere, *Crocodilus, Mentiens, Obvelatus*, &c. quas plerasque collegit *Gassendus*, et retulit in *Libro de Origine et Varietate Logicæ:* Nos eodem fere ordine explorabimus quo ab illo sunt propositæ.

1. Achilles vocatur argumentum quo usus est Zeno Eleates, non ut motum tolleret, quod vulgo sed falso dicitur; sed ut ostenderet continuum non esse infinite divisibile, quia hoc dato motus tolleretur. Argumentum sic se habet. Sit Achilles quantum voles πόδας ὠκὺς, puta decuplo velocior testudine. Quiescente illo, confecerit testudo partem aliquam (puta decimam) spatii percurrendi. Tum procedat Achilles, idemque spatium percurrat: progredietur interim testudo per partem ejus decimam, h. e. totius spatii centesimam; hanc conficiat Achilles, et percurret interim testudo hujus centesimæ decimam; et sic deinceps in infinitum; quo fiet ut Achilles nunquam assequatur testudinem.

Ineptum est hoc Sophisma. 1. Quia solvitur ambulando; quod fecit Diogenes. 2. Quoniam ex ipsâ hypothesi, dum testudo quæ præcessit spatio A, conficit $\frac{2}{10}$ A, Achilles conficiet 2 A; adeoque statim assequetur eam, et antecedet. Sed hoc (inquies) in casu proposito nunquam fiet. Recte; Ne enim fiat, in

ipso proponendi modo clam inseritur nova conditio. Nam 3. Argumentum aliis verbis hoc dicit; Si Achillem decuplo velociorem præcesserit testudo; et *uterque meo pergat arbitratu;* Ego perficiam ne Achilles assequatur testudinem: Quare prorsus nunquam assequetur. Quæ est *Fallacia a dicto secundum quid, ad dictum simpliciter.*

2. Diodorus Cronus, quod Sophismata Stilponis non solvisset, exinde ὄνος appellatus est; id cognominis aliunde promeritus, quod ad hunc modum contra motum disputaret. *Mobile movetur vel in quo est loco, vel in quo non est: At neutrum horum;* Ergo *Non omnino.* Unde facete illum lusit Herophilus, qui ut luxatum illi humerum restitueret rogatus, *Tuus* (inquit) *humerus vel in quo erat loco existens excidit, vel in quo non erat. Sed neutrum horum;* Ergo *non omnino.* Diodori argumento breviter et perspicue respondet Gassendus, Quod movetur moveri *a loco* in quo erat, *per locum* in quo est, (sive quem pertransit,) *ad locum* in quo nondum est, sed futurum est.

3. Reciprocum vocat Argumentum *Gellius,* quod Græce dicitur Ἀντιστρέφον: cui illustrando conficta est Fabula quæ Græcorum vanitatem olet. Narrant enim inter Protagoram et Euathlum, vel (ut facetiæ locus sit) inter Coracem et Tisiam convenisse, ut hunc ille Dialecticam

doceret; idque hâc lege, ut dimidium mercedis statim acciperet; reliquum, cum discipulus causam vicisset. Primam exinde litem cum Discipulo contestatus est Magister, cum mercedis reliquum lege peteret, apud Judices vero sic agebat: *Ego si vicero, Tisia, Tu solves ex sententiâ; sin minus, ex pacto: utroque igitur modo solvendum est.* Respondit Tisias, *Ego nihil solvo; Tu si viceris, ex pacto; sin minus, ex sententiâ.* Tanto utrinque acumine perculsi boni judices, exclamarunt Κακοῦ Κόρακος κακὸν ᾠὸν, causamque in longissimum diem distulerunt.

Ineptum erat Coracis Dilemma quia potuit tam bene retorqueri. Nihilominus callide agebat, si id Judices vidissent. Nam cum mercedem inique peteret, causâ cadere debebat; quamprimum autem cecidisset, ei merces ex pacto debebatur.

§. 6. 4. MENTIENS, qui est Græce Ψευδόμενος, Chrysippi Syllogismus ne ab ipso quidem solutus, præter cæteros insolubilis habetur. Eum Cicero sic enuntiat: *Si dicis te mentiri, et verum dicis, mentiris; Sed dicis te mentiri, et verum dicis; mentiris igitur.*

Congrue loquere, Chrysippe, et intelliges te vel nihil prorsus, vel nihil dicere difficile. Qui se dicit *mentitum*, et verum dicit, *menti-*

tus est; Qui mentiturum, mentietur. Horum utrumque verum est, et nemini obscurum: Sed qui ut verum simul dicat et mentiatur dicit unum aliquid, cujus partes sibi invicem contradicunt, is nec verum, nec falsum, sed omnino nihil dicit: quando enim sententiæ pars una evertit alteram, tota nihil prorsus significat, sed inaniter strepit.

Subtilius disputare videbantur qui sic agebant: *Cretenses esse mendaces dicit Epimenides Cretensis: Mentitur igitur;* Ergo *Illi sunt veraces;* Ergo *et Ille verum dicit;* Ergo *Illi rursus sunt mendaces* &c. Sed profecto nihil stultius est hoc argumento, nisi vox *Cretenses* eos ad unum omnes significet, et omnis mendax quicquid dicit mentiatur.

Videtur hic *Mentiens* peperisse subtilem illam Scholasticorum *de Insolubilibus* doctrinam. "Nam talia argumenta (inquit *Occam*) non "possunt fieri nisi quando actus humanus re- "spicit istum terminum *Falsum*, vel aliquem "consimilem, affirmative; vel hunc terminum "*Verum*, vel aliquem consimilem, negative." Esse hæc *Sophismata* ante dixerat; nec vocari *Insolubilia*, quia nullo modo solvi possunt, sed quia cum difficultate solvuntur.

Insolubilis exemplum sic proponitur. Incipiat Socrates sic loqui, *Socrates dicit falsum;* et nihil amplius loquatur: tum interroget aliquis, utrum vera an falsa sit hæc propositio.

Respondeo, nec veram nec falsam esse, sed nihil significare, nisi aliquid aliud respiciat, quod a Socrate ante dictum supponitur. Qui enim profert hæc verba, *Socrates dicit falsum*, fert judicium de dicto Socratis; quique fert judicium, necessario præsupponit aliquid de quo judicet: Unde cum sententia præsupponat objectum suum, clarum est eandem numero propositionem, et sententiam et ejus objectum esse non posse. Quare et Scholarum subtilitas hic nihil proficit; nihilque opus est plura dicere de Insolubilibus.

5. Fallens Διαλανθάνων, vel ut alii Διαλεληθὼς, de Juramento ludit sicut *Mentiens* de nudâ affirmatione. E. g. *Qui jurat se falsum jurare et falsum jurat, vere jurat.* Quare eodem fere modo quo *Mentiens* explicatur.

§. 7. 6. et 7. Obvelatus, alio nomine Electra, est *Fallacia a dicto secundum Quid, ad dictum Simpliciter*. Nam colligere pertendit, quod et Patrem Filius et Soror Fratrem, h. e. Electra Orestem *prorsus* nesciat, si eundem *velo obductum* se nescire fateatur.

8. et 9. Acervalis et Calvus, sunt ejusdem Sophismatis duo tantum exempla. V. g. Si rogatus a sophistâ, neges te *Calvum* fieri amisso crine uno, duobus, tribus, et sic deinceps ad 99, sed amissis centum concedas; vel

eodem modo neges 99 grana *Acervum* esse, centum autem esse fatearis; concludet ille grano unico adjecto Acervum fieri; crine unico amisso, Calvitiem. Facile autem respondetur, *Unum centesimum* non esse *Unicum;* nam est Unum cum nonaginta novem. Vel si mavis sic; Fit Acervus, grano uno, sed adjecto; adeoque non unico, sed cum pluribus aliis. Fit Calvities crine uno, sed post multos alios, amisso.

10. Cornutus et *Ceratinus*, *Ceratine*, *Ceratis*, et *Ceras* dicitur Sophisma illud ante memoratum, *Quod non amisisti habes* &c. Quæ est *Petitio Principii;* nam supponit te cornua habuisse.

Ineptissima hæc Fallacia plus acuminis præfert juxta veterem disputandi modum rogando proposita. Erit enim fortasse, qui rogatus, *Quod non amiserit, utrum habeat necne?* non intelligat se captum iri, si simpliciter respondeat; sive habere se, sive non habere dicat. Nam eum adiget sophista, ut vel se habere cornua, vel non habere oculos fateatur.

11. Acutus sibi videbatur Menedemus (Eretriensis scil. quem ἐριστικώτατον appellat Laërtius) quum ad hunc modum nugaretur. *Diversum, a Diverso Diversum est; Prodesse est a Bono Diversum; Prodesse igitur non est Bonum.* Quæ est crassa et putida *Æquivocatio;* et nihil amplius.

§. 8. 12. CROCODILUS a Chrysippo inventus, qui ad Fallaciam Consequentis revocari poterit, sic proponitur. *Surripuerat infantem Crocodilus; redditurum se, hâc lege pollicitus, ut divinet mater, utrum apud se reddere an non reddere constituerit.* Si dicat mater, *Non reddere;* mentietur si infantem receperit: Si dicat *reddere:* non reddet quia hoc est falsum. Quamobrem Chrysippus nihil esse putat difficilius quam responsum matri suggerere. Nec injuriâ, si lubricum putet divinare; sed immerito, si in hoc (ut videtur) hæreret, Quod si puerum Crocodilus non reddere constituerit, quamvis id Mater divinaverit non reddet: quasi consilium quod primum intenderat Crocodilus, postquam indicatum est, repudiare non possit, et ex pacto non debeat: nam si Mater recte divinaverit, recepto puero, non mentitur illa, sed consilium mutat Crocodilus.

13. METENS, Θερίζων, qui vocatur, ita placuit Zenoni Stoico, ut Sophistæ a quo eum didicerat duplum pactæ mercedis numeraret. Proponente Ammonio sic se habet: *Si messurus es, non fortasse metes, fortasse non metes, sed metes omnino;* Pariter, *si non messurus es, non fortasse metes, fortasse non metes, sed prorsus non metes:* Atqui *vel metere te, vel non metere, necessarium est; perit igitur* Fortasse, *quod in neutrâ hypothesi locum habet.* Fortunatum

Sophistam! qui mercede duplâ hunc fumum vendidit; *Vel hoc, vel illud evenire est necesse;* Quare *hoc et non illud necessario eventurum est.* Nihil amplius dicit qui sic dixerit, *Ut vel metas vel non metas est necesse;* Ergo *Vel necessario metes vel necessario non metes.* Breviter, hæc *Fallacia Divisionis* est; nam in Antecedente, Modus *Necessario* non tribuitur nisi toti Disjunctivæ; sed in Consequente dicitur de ejusdem membris seorsim acceptis.

14. Ignava Ratio vel 'Αργὸς λόγος appellatur, qui si valeat nihil est omnino quod agamus in vita. V. g. *Si Fatum est ægroto convalescere, sive medicum adhibuerit sive non adhibuerit, convalescet:* Pariter, *si illi Fatum est non convalescere, sive medicum adhibuerit sive non adhibuerit, non convalescet: et alterutrum Fatum est; medicum ergo adhibere nihil attinet.* Lepide respondit Chrysippus posse esse *confatalia* adhibere medicum et convalescere: Quemadmodum et Zeno, quando servum furem verberabat, *Furari sibi Fatum esse* dicenti, et *Vapulare* respondit. Sed commodius dici videtur, Si sit Fatum, hoc valere argumentum; idque vel solum sufficere ne Fatum esse concedamus. Argumentum hocce et quæ præcedunt pp. 333, 334. N°. 2. et 3. ex Dilemmatis legibus facile solvuntur.

§. 9. PLURA sunt apud Autores Inexplica-

bilium Rationum nomina; quorum exempla Gassendus quia nusquam invenisset, ipse reperit. Verum ea relinquimus studiosis; quibus etiam consulto est relictum, ut quæ sunt hactenus explicata, illi explicent in Syllogismos conversa. Exempla Gassendi ne desiderent qui libro carent, non pigebit exscribere.

Dominans, Κυριεύων. Themistoclis filius nec Græcis imperat, nec de imperando cogitat; Verum imperat Matri, quæ imperat Themistocli, qui Græcis imperat; *Dominatur* itaque Græcis, *et non-dominatur*.

Conficiens, Περαίνων. Multum itineris *conficit*, *et non conficit* Canis, qui in rotâ gradiens totum diem, ex eodem tamen loco non recedit.

Superpositus vel *Superlativus*, Ὑπερθετικὸς, Soriti forte affinis; Ut si roges quota sit palea, quæ si mulo *super-imponatur* ille oneri succumbat?

Nullus, Οὔτις. Homo in communi nec est hic, nec ille, nec alius homo singularis, Ergo *Nullus*. Vel ut tritum Sophisma: *Quod Ego sum, Tu non es; Ego sum homo;* Ergo *Tu non es*. Vel denique ut Chrysippus; *Qui est Megaris, non est Athenis; Homo est Megaris;* Ergo *Homo non est Athenis*.

Subjicit Gassendus ex Laërtio has Chrysippi Rogatiunculas. 1. Qui non initiatis indicat mysteria, impie agit. Sed hoc facit Hierophantes; *Ergo* Impie agit. 2. Est quoddam

caput; Id tu non habes; *Ergo* Caput non habes. 3. Id quod loqueris ex ore tuo egreditur: Currum loqueris; *Ergo* Currus ex ore tuo egreditur.

§. 10. NON temperaturos sibi juvenes satis scio quin dissiliant risu, ubi hæc tam futilia intellexerint a gravissimis philosophis serio fuisse proposita; et veteribus adeo difficilia haberi, ut Philetas Cous præceptor Ptolemæi Philadelphi solius *Mentientis* explicandi studio confectus interierit. Quamvis autem Aristotelis beneficio, videantur ista ut sunt levia, in iis tamen prompte atque artificiose solvendis non inutiliter sese juvenes exercebunt: nam in gravissimis disputationibus, hæc eadem recocta Novæ præsertim Philosophiæ cultores sæpissime reponunt.

V. g. *Gassendus* Vacuum quod appellat *disseminatum* eodem fere sophismate demonstrare pertendit, quo olim Zeno *contra motum* utebatur: suamque *Hobbius* de *Necessitate* sententiam iisdem propugnat fallaciis quibus *Fatum* Stoici: aliaque plurima hujus generis, quæ sunt nobis prætereunda, studiosis inter legendum occurrent.

Fefellit virum satis alias perspicacem hæc sequela, quæ in ambiguis distinguendis versatum minime (opinor) fefellisset; *Possum datæ peripheriæ trientem exhibere; Possum igitur*

datam peripheriam trisecare; cujus falsitatem ipsa praxis redarguit; neque enim trientem exhibuit, sed alterius circuli peripheriam trienti parem: h. e. non *trientem* ipsum, sed *trientis valorem.* Paria fecisset qui, oblatum sibi solidum trisecturus, ne attrectato quidem solido porrexisset drachmam.

These Sophisms, or, as they were absurdly called, Unanswerable arguments, are for the most part unworthy of notice; except as they present an historical record, either of the trifling habits of some of the ancient sophists, or of the absurdities into which men may be carried when they are determined to contend for victory rather than for the discovery of truth, and are satisfied if they can silence instead of convincing their opponents. Each of the specimens here given may be easily classified under some one of the thirteen species of fallacies already enumerated and illustrated on pages 303—331.

§. 11. *De demonstratione ex contradictoriâ.*

VOLENTEM hic desinere pungit scrupulus, qui nonnullos hodie Mathematicos male habet. Nam in demonstrationibus quibusdam, conclusionem ex sui contradictoriâ, per legitimas necessariasque consequentias directe inferri volunt. Quod si ita sit, miror a veteribus, præsertim Scepticis non fuisse animadversum; quippe hoc dato tota ruat Logica necesse est.

Dicunt tamen Theodosium demonstrasse

quod *si maris superficies non est sphærica, est sphærica.* Verum ille nihil tale demonstravit; sed tantum maris superficiem *si nondum esset, fore sphæricam:* siquid enim emineat (inquit) illud statim, ex naturâ humidi, subsidet: Unde si maris superficies sit (ut non est) inæqualis, *fiet* perfecte sphærica.

Videamus aliud exemplum. Sunto numeri duo inæquales, et inter se primi; dico quod eorum differentia ad minorem prima est. *Esto enim numerus aliquis qui metitur minorem; idemque metiatur differentiam:* Ergo metitur eorum summam; Ergo metitur majorem, huic summæ parem; *Ergo non metitur minorem.*

Possum hoc loco dicere quod mendose colligitur: siquis enim numerus minorem metiatur ex supposito, et majorem ex demonstrato; colligendum erat *datos esse inter se compositos, quod est contra Hypothesin.* Verum ne pluribus exemplis sim molestus, malo generale responsum. Dico igitur, quod nulla hujusmodi demonstratio supponit solam suæ conclusionis contradictoriam; sed quælibet cum contradictoriâ ponit aliquid quod eam evertit; et evertere, demonstrando ostendit. Quare conclusionem non infert ex ejus contradictoriâ; sed ex contradictoriâ cum contradictoriæ eversivâ: quod si faciat nihil mirum. Nam *Si Socrates* v. g. *est homo, et*

irrationalis, tum *Si est homo, non est homo:* Et *Si Socrates est mortuus, et scit se esse mortuum*, tum *Si est mortuus, non est mortuus:* Et universaliter, *Si et hæc est vera et quæ hanc evertit:* tum *Si hæc est vera, non est vera:* quibus omnibus inest una quæ est prorsus nulla difficultas. Ubi enim Hypothesis evertit suppositionem, quidni ex Hypothesi sequatur, quod suppositioni contradicit?

The method of demonstration by means of the *contradictory* of the question to be proved is valid: and it frequently occurs that no other method can be conveniently adopted. The attempts, for instance, to substitute direct arguments instead of the indirect proof given by Euclid in proof of some of the more simple properties of circles have signally failed.

The nature, however, of this indirect proof is often misunderstood. It requires a greater effort of mind to apprehend the force of the reasoning. And many are prejudiced against it by the erroneous imagination, that it involves the absurdity of proving a proposition to be true by admitting its contradictory to be true. Whereas it merely, as a temporary concession, supposes the contradictory to be true, for the purpose of tracing out the consequences of such a supposition.

1. One mode of employing the contradictory in support of any theorem is simply to shew, that, *supposing the contradictory ever had been or could be true, it could not permanently continue so.* Of this kind is the first example in the text.

In like manner it may be argued, that *there cannot be a vacuum: for if there ever had been a*

vacuum in our system, the elasticity of matter, with the constant tendency to the re-adjustment of the equilibrium, would soon have occasioned the filling up of the supposed vacancy.

Again; *An equality of property among all the inhabitants of any country is an impossibility. For if such an equality were at the present moment attained, the different degrees of diligence and of prudence, and the various extent of mental and physical powers exerted by each, would immediately occasion an inequality of property.*

2. But the more frequent mode of employing the argument by contradiction is in the way of hypothesis. Let the question, for example, be, *There is no natural vacuum pervading any part of the solar system.* To prove this, it may be supposed, as a kind of *argumentum ad hominem* or concession to the objector, that *there is a vacuum: If so, it must follow that the communication of light and heat between the sun and the earth must be broken off: but our experience convinces us that this is not the case: therefore the supposed contradictory is not true: therefore the question proposed is true.*

Thus in the second example in the text; the theorem is, *If two numbers are prime to each other, the difference between them is prime to the less given number.* The argument does not attempt to prove this *by* its contradictory, but by shewing that *its contradictory involves an impossibility. If*, the disputant proceeds, *the difference and the less number be not admitted to be prime to each other, suppose them not primes; that is, let there be admitted to be some common measure above unity of both these numbers.* But it is already known that *a common measure of any two quantities will measure their sum; therefore the common measure of the less number and the difference must measure the greater number.* But *this is an impossibility, because the condition of the theorem*

is that the given numbers are mutual primes, that is, have no common measure above unity: therefore, *the assumed contradiction is false: and the original proposition true.*

This mode of argument has already been shewn to be a *destructive hypothetical sorites.* Thus the above argument may be formally expressed in this manner: *If the smaller of two mutual primes, and their difference, be commensurable, then that smaller number, and the sum of it and the said difference, are also commensurable; but if these are commensurable, the smaller number must be commensurable with the greater number; (for this is equal to the sum of the smaller number and the difference;) but by the original condition, those two numbers were not commensurable: therefore the smaller number and the difference are not commensurable; that is, they are prime to each other.* See another example on page 256.

PROMISCUOUS SYLLOGISMS

FOR EXERCISE.

FIRST SERIES.

Categorical Syllogisms.

(See pages 171 and 211.)

1.

SATIRE is a legitimate mode of exposing the failings of others; the calling others by ill names is not satire: consequently it is not a legitimate mode of exposing their failings.

2.

A tyranny is inconsistent with the liberty of the subject; but the English government is not inconsistent with the liberty of the subject: and this undeniable fact affords a sufficient evidence that the English government is not a tyranny.

3.

True poets are formed by nature, and not by art; but paltry rhymesters compose according to art, and not by the impulse of nature: consequently paltry rhymesters are not true poets.

4.

Every amiable man merits the esteem and respect of his neighbours; now it is also certain, that all whose pure aim is to do good to their fellow-creatures merit the esteem and respect of their neighbours: whence we must necessarily infer, that all whose pure aim is to do good to their fellow-creatures are amiable men.

5.

Liberality is the means of making many happy; it is not, however, the way to become rich: so that that which is the way to become rich is not the means of making many happy.

6.

Every science is a collection of rules tending to a certain end; rhetoric is a collection of rules tending to a certain end: therefore rhetoric is a science.

7.

The saying is no less true than common, that murderers never escape punishment; yet even murderers hope to elude the laws of their country: of those therefore who hope to elude the laws of their country, some do not escape punishment.

8.

No amiable man should be despised; every man in whom are united virtue and politeness is amiable: it follows that some of those happy persons in whom these two excellent qualities are united ought not to be despised.

9.

Every man of solid understanding lives virtuously; every true Christian lives virtuously: therefore every true Christian is a man of solid understanding.

10.

No diligent student should be deprived of just commendation; every diligent student abstains from idleness and trifling amusements: therefore no one who abstains from these should be deprived of just commendation.

11.

A wise and affectionate parent governs his family uprightly; he is worthy of love and honour who governs his family uprightly: therefore a wise and affectionate parent is worthy of love and honour.

12.

Those things which cannot be enumerated do not exist; innate ideas cannot be enumerated; therefore innate ideas do not exist.

13.

The cook is always about the fire; the fire is the highest of all the elements; therefore of all sciences the cook's occupation is the highest.

14.

He who seeks the best end in the use of the most suitable means is wise; he likewise is wise who applies his learning to the purposes of life and the welfare of society: therefore he who applies his learning to the purposes of life and the welfare of society seeks the best end in the use of the most suitable means.

15.

The testimony extorted from a reluctant witness is likely to be true; the testimony of an enemy is thus extorted, and is consequently likely to be true.

16.

Hatred is an odious vice; but, alas! there are many odious vices which are not abhorred as they deserve; which circumstance evinces the fact that hatred is not abhorred as it deserves.

17.

Some works of art are useful; all works of human invention are works of art; therefore some works of human invention are useful.

18.

All books of literature are, it must be acknowledged, subject to error; now the fact is, that they are all of man's invention: consequently we are compelled to draw the painful inference, that all things of human invention are subject to error.

19.

All who are endued with prudence are worthy of credit and confidence; no madmen or enthusiasts are endued with prudence: it is manifest then that no madmen or enthusiasts are worthy of credit and confidence.

20.

None of the brute creation are immortal beings; but all immortal beings have the power of motion; therefore some things which have the power of motion are not of the brute creation.

21.

A decorous conduct is the part of true wisdom; it is also the part of true wisdom to discountenance foolish innovations: therefore to discountenance foolish innovations is decorous conduct.

22.

A furious bull is a dangerous animal; Luther was attacked by a furious bull: therefore Luther was attacked by a dangerous animal.

23.

Love is a passion; my brother Joseph is in love: therefore he is in a passion.

24.

All the helots were slaves; all Athenians were free: therefore it follows that no Athenians were helots.

25.

A natural property cannot be altered by habit; to fall downwards is the natural property of a heavy body: therefore a heavy body cannot be habituated to fall upwards.

26.

Every prudent man is anxious to support the authority of government; no seditious subject is

anxious to support it: therefore it is demonstrated that no seditious subject is a prudent man.

27.

A language which is composed of several other languages possesses more copiousness than elegance; but such is the English language as now spoken: the English language therefore as now spoken possesses more copiousness than elegance.

28.

To kill a man is a sin; a murderer is a man; to kill a murderer is consequently a sin.

29.

He who is assiduous in surmounting difficulties deserves applause; now Demosthenes displayed unwearied assiduity in correcting the natural defects of his speech, and in fact became the greatest orator of Greece; on these accounts therefore he was a man deserving of a high degree of applause.

30.

That which excites a passion precedes it; insult excites anger; insult therefore precedes anger.

31.

Every mean artifice should be exploded from the dealings of men of honour; now equivocation is undoubtedly a mean and ungenerous artifice; as such therefore it ought by no means to be admitted among persons of probity.

32.

There are things which though confessedly liable to change, and therefore imperfect, are yet useful; some parts of the Mosaic law were liable to change, and therefore imperfect; therefore some parts of the Mosaic law were useful.

33.

It is noticed by Aristotle, that all animals which possess fortitude have the extremities of their limbs large; but animals possessed of fortitude disregard the insults of inferior creatures; therefore all animals characterized by large extremities disregard the insults of inferior creatures.

34.

Self-murder must be condemned as a most heinous offence; yet there are species of voluntary death which cannot be justly designated by that opprobrious name of self-murder: it is to be inferred then, that there are species of voluntary death which are not necessarily to be condemned as heinous offences.

35.

Suicide is not defensible on any principle of morality; some species of voluntary death are not suicide; therefore some species of voluntary death may be defended on the principles of morality.

36.

Some of the primary planets are distinguished by the name asteroids; but the Sun, the Moon, the Earth, and Saturn, are not called asteroids: consequently they are not primary planets.

37.

Some virtuous men have made gross mistakes; all who live uprightly are virtuous men: some consequently who live uprightly have made gross mistakes.

38.

Every real Christian walks circumspectly; some who profess to be Christians do not so walk: therefore some who profess to be Christians are not really such.

39.

Some virtuous persons enjoy much hilarity of disposition; all virtuous persons are temperate: therefore all temperate persons enjoy much hilarity of disposition.

40.

That which incurs the hatred of the many is not thereby proved to be necessarily bad; the softer virtues, as justice, temperance, and liberality, do not incur the hatred of the many: these virtues therefore cannot be proved to be bad.

41.

Those things which depend on accident do not admit of demonstration; mathematical conclusions admit of demonstration: therefore mathematical conclusions are not accidental.

42.

Some there are who refuse to indulge themselves in unlawful pleasures; all men are naturally inclined to unlawful pleasures: therefore some who are naturally so inclined refuse to indulge themselves in them.

43.

The acquisition of every science which is of any real benefit among men requires attention and diligence: but every science has many difficulties, which cannot be overcome except by perseverance: therefore some things which have difficulties such as cannot be overcome but by perseverance, and which require diligence and attention, are useful sciences, and of real benefit to men.

44.

The attainment of the utmost extent of learning is an object of universal desire; yet such an acqui-

sition will not render a man happy or virtuous: it appears then that that which will not render a man happy or virtuous is an object of universal desire.

45.

It is prudent to employ our thoughts about fundamental truths; for our life is short: and such ought surely to be the aim of those who have no long time in which to acquire an acquaintance with any truths.

46.

Every wise and prudent man abstains from unlawful pleasures; all who obey the divine law abstain from unlawful pleasures: all who obey the divine law are wise and prudent men.

47.

All Englishmen are lovers of liberty; no Dutchman is an Englishman: therefore no Dutchman is a lover of liberty.

48.

Some heathen authors deserve credit; some heathen authors relate prodigies: therefore some prodigies deserve credit.

49.

Nothing shameful or disgraceful should be allowed to taint the practice of a man of honour; no fraud of any kind should be allowed to taint such a man's practice; therefore every fraud is shameful and disgraceful.

50.

Some good men maintain erroneous sentiments; all heretics maintain erroneous sentiments: therefore some heretics are good men.

51.

All acts of parliament require the concurrence of the king, lords, and commons; orders in council are not acts of parliament: therefore orders in council do not require the concurrence of the king, lords, and commons.

52.

There are cheap books, the object of which is to sap the foundations of government; the new editions of the classics are cheap books: those editions therefore have for their object to sap the foundations of government.

53.

All the public buildings in Oxford lose some portion of their splendour and dignity by the appearance of decay; in fact, those buildings consist of a kind of inferior oölite: therefore all buildings constructed of that inferior oölite lose some portion of their splendour and dignity by the appearance of decay.

54.

Some of the basest of men do not discover to the world their true character; all who do not discover to the world their true character are hypocrites: therefore some hypocrites are the basest of men.

55.

It cannot be denied by any reasonable person, that *some* even of those who are justly denominated *wise men have* in the course of their life *committed great errors;* nor is it less universally admitted, that *they who unite learning with experience are* truly deserving of the character of *wise men:* the necessary inference then is most evident, namely, that however decisive and almost infallible we are apt to suppose their testimony to be in any matter of prudence and judgment, *there* yet have been, and

still doubtless *are, persons uniting learning with experience, who have notwithstanding committed great errors.*

56.

They who are not to be trusted are always liable to suspicion; liars are not to be trusted; liars are always liable to suspicion.

57.

No traitors ought to be suffered to escape condign punishment; nor should those men be suffered to escape condign punishment who excite their fellow-subjects to rebellious actions; therefore they who excite their fellow-subjects to rebellious acts are traitors.

58.

No science is to be acquired without some degree of serious application; some things essential to the welfare of society are sciences; some things therefore essential to the welfare of human society are not to be acquired without some degree of serious application.

59.

Subjects are under obligation to honour their king; William the Fourth is the king of England; therefore Englishmen are bound to honour William the Fourth.

60.

Whatever is in its nature quite immaterial deserves no particular concern; the soul of man is immaterial; therefore the soul of man demands no particular concern.

61.

There are hopes entertained by many which must terminate in disappointment; some hopes in fact

evidently rest on an insufficient foundation; some things therefore which rest on an insufficient foundation must terminate in disappointment.

62.

All stars are suns of planetary systems; but all suns are supposed to be opaque bodies, surrounded by a luminous atmosphere: consequently all such bodies are stars.

63.

Some heavenly bodies which are not stationary are planets; comets are of that description; it follows then that comets are planets.

64.

Whatsoever merits any degree of commendation must proceed from some other cause than mere weakness; some instances of good-nature however do not proceed from any principle besides weakness; therefore there are instances of good-nature which do not merit any degree of commendation.

65.

Every man who knows the value of time will be unwilling to waste it in the pursuit of trifles; all those are guilty of this folly who employ their days in light reading to the neglect of such works as may tend to instruct and form the mind; such persons therefore must be acknowledged to be ignorant of the value of time.

· 66.

A government which supports the traffic in slaves persists in an offence against religion and virtue; our own government has put an end to that traffic; it does not therefore persist in any offence against religion and virtue.

67.

Some of the most splendid virtues are often tarnished by their union with baser principles; fortitude is one of the most splendid virtues; fortitude therefore is often tarnished by its union with baser principles.

68.

No metals have a vegetative power; yet some things which have a vegetative power are discovered beneath the earth; therefore some things discovered beneath the earth are not metals.

69.

Every real Christian is happy; some real Christians are neither learned nor valiant; hence some who are neither learned nor valiant are happy.

70.

Some innovations are productive of general benefit; no change in the structure of the British constitution would be productive of general benefit; consequently no change in the structure of the British constitution would be an innovation.

71.

No departure from the dictates of true wisdom can promote the public good; some innovations can promote the public good; some innovations are not departures from the dictates of true wisdom.

72.

Most of those who are much occupied in subterraneous occupations are unhealthy; all miners are much occupied in subterraneous occupations; therefore all miners are unhealthy.

73.

Nothing inconsistent with virtue can be ultimately beneficial either to states or to individuals; lotteries

are inconsistent with virtue: therefore lotteries cannot be ultimately beneficial either to states or to individuals.

74.

Some well-meant endeavours are not consistent with judgment and prudence; yet all well-meant endeavours merit some degree of approbation; therefore some things which merit a degree of approbation are not consistent with judgment and prudence.

75.

All Christians believe the soul to be immortal; no Christians are Hindoos; therefore no Hindoos believe the soul to be immortal.

76.

All minerals are subterraneous productions; no subterraneous productions are animate beings; therefore no animate beings are minerals.

77.

All responsible beings lie under an obligation to a virtuous life; but the brute creation are not responsible beings; they consequently do not lie under that obligation.

78.

That style is best adapted to didactic writings which is most easily remembered; a concise style answers best to that description; and is in consequence best adapted to such writings.

79.

There are many vices which excite universal indignation; emulation however does not produce such an effect: whence it is evident that emulation is not a vice.

80.

No true philosopher can indulge in impatience and ill-will; Socrates, for instance, never gave way to these vices; therefore Socrates was a true philosopher.

81.

The specimens of the Doric order display an extremely simple style of architecture; the ruins of Stonehenge display an extremely simple style of architecture; therefore the ruins of Stonehenge are specimens of the Doric order.

82.

All the fixed stars emit light from themselves; several of the heavenly bodies are not fixed stars; therefore several of the heavenly bodies do not emit light from themselves.

83.

Every thing liable to abuse should be carefully checked; some of our most useful and necessary appetites are liable to abuse; therefore some of our most useful and necessary appetites should be carefully checked.

84.

No human virtue is free from imperfection; some human virtues have effected great benefits for mankind; therefore some things which have effected great benefits for mankind are not free from imperfection.

85.

No affluence of fortune or elevation of rank exempts its possessor from the duties of application and industry; for industry is the law of our being; from which those accidents are insufficient to exempt any man.

PROMISCUOUS SYLLOGISMS

FOR EXERCISE.

SECOND SERIES.

Redundant or Defective Syllogisms.

(See page 246.)

1.

FAMILIARITY is productive of contempt, inasmuch as it occasions a needless exposure of private failings.

2.

The cause of evil (according to the French philosophers) is itself evil: religion (they likewise affirm) is the cause of evil; because it gives occasion to much violence, injustice, and bloodshed: therefore (they infer) religion is an evil.

3.

Correct writers avoid concluding their sentences with a particle; (for a clause so constructed falls weakly on the ears;) but reviewers (since they are compelled to write with great rapidity) are frequently guilty of this fault: consequently they are often not correct writers.

4.

Discord is a greater vice than intemperance: for intemperance implicates but one person; but discord implicates more than one: and that vice which implicates the greater number of individuals is the greater vice.

5.

Discord is not a greater evil than intemperance: for that generally arises from the impulse of anger;

while the latter almost invariably proceeds from inveterate habit.

6.

They who are not conscious of guilt are not subject to fear: hence thieves are timid; while pure spirits are exempt from any such sensation.

7.

Man should be restrained by laws, because he is an animal subject to selfishness, and other depraved passions.

8.

A young man, being inexperienced in the affairs of life, and too much under the influence of his passions, is not a fit student of moral philosophy.

9.

Sin is hateful, because it is opposed to the divine will.

10.

I think; therefore I am. I am certain that I have existence, because I have the power of thinking.

11.

The study of mathematics so entirely engrosses the mind as to render the science interesting and delightful.

12.

It cannot be denied that classical studies are attended with much solid benefit, if it is duly considered what stores of useful knowledge are contained in many of the writings with which such studies render us acquainted.

13.

It is impossible that any thing should *be* and *not be* at the same time. Now whatever produces itself must *be* and *not be* at the same time: (for it *is*,

because it acts; and *is not*, because it is to be produced:) therefore it is impossible that any thing should produce itself.

14.

A pious woman makes a good parent; a good parent brings up her children virtuously; she who brings up her children virtuously is a useful member of society; a useful member of society is a blessing to a state; that which is a blessing to a state is a fit subject of public gratitude: therefore a pious woman is a fit subject of public gratitude.

15.

The inhabitants of St. Domingo cannot be enslaved; for how can such an event befal a people determined to die rather than to resign their liberty?

16.

A good face is a letter of recommendation; for it greatly prepossesses the beholders in favour of its owner.

17.

The proud man is most bitterly disappointed: he looks for honour, and receives only contempt.

18.

All the brute creation are guided in their actions by instinct, not by reason; consequently instinct and reason are different things.

19.

It is a certain sign of a bad heart to be inclined to defamation; for such an inclination arises from a neglect of what is laudable in a man's self, and an impatience of seeing it in another.

20.

Every thing which is new or uncommon raises a pleasure in the imagination, because it fills the soul with an agreeable surprise, gratifies its curiosity,

and gives it an idea of which it was not before possessed.

21.

Virtue has no tendency in itself to provoke others to jealousy; he who is provoked to jealousy by it shews himself possessed of a malignant spirit.

22.

The late war has thrown capital into new channels; whatever has this effect produces and extends various profitable branches of commerce: that which thus extends commerce employs capital to great advantage. The effect of this profitable employment of capital has been to raise up a vast population, supported by means which cannot be permanent. That which produces such an effect must ultimately, as experience proves, throw back that redundant population on the public in a state incapable to procure work. This state of things occasions the increase of poor rates, and the artificial mode of supplying through them the deficiency of wages. Such increase diminishes the proper value of property and the means of supporting the population. Hence relief is through necessity withheld from poverty. The continuance of that unrelieved poverty excites discontent; whatever excites discontent promotes a spirit of disaffection to government which is sure to be fostered by insidious demagogues. The whole then of the present distressing state of the country is to be traced back to the war as its cause and origin. (*Report of a speech in the House of Lords, Nov.* 30, 1819.)

23.

Sullæ et Cæsaris pecuniarum translatio a justis dominis ad alienos non debet liberalis videri. Nihil est enim liberale quod non idem justum. (*Cic. Off.* i. 14.)

24.

Θαυμαστὸν οὐδὲν ἐστὶν . . . .
. . . ἁνδάνειν αὑτοῖσιν αὐτοὺς καὶ δοκεῖν
Καλῶς πεφυκέναι· καὶ γὰρ ἁ κύων κυνὶ
Κάλλιστον εἶμεν φαίνεται, καὶ βοῦς βοΐ,
Ὄνος δ' ὄνῳ κάλλιστόν ἐστιν, ὗς δ' ὑΐ.

(*Diogen. Laert. ex Epicharmo*, iii. 16.)

25.

A wise man is not surprised, because he is not disappointed; and he escapes disappointment because he never forms an expectation.

26.

No men are brutes; all brutes are irrational beings; all irrational beings are free from responsibility; therefore no men are free from responsibility.

27.

It was good policy in the Greeks to resist the subjugation of Egypt by the Persian monarchs, as calculated to endanger their own liberty; for Darius and Xerxes proceeded against Greece after their attacks upon Egypt. So that it was probable any future conqueror of Egypt would follow their example.

28.

Θνατὰ χρὴ τὸν θνατὸν, οὐκ ἀθάνατα τὸν θνατὸν φρονεῖν.

29.

All human creatures are rational; all rational beings are responsible; some who are responsible violate duty; therefore some human creatures violate duty.

30.

Some learned men are vicious characters; all vicious characters are injurious to society; all such

deserve punishment; none who deserve punishment should be treated with honour; therefore some learned men should not be treated with honour.

31.

The whole Bible relates to Christ. It commences by displaying man's need of such a Saviour, and is closed with a promise of his second advent. The historical parts trace his descent as man, and contain many things emblematic of him. The ceremonial law typifies him; the moral law seals our ruin without him, and shews us how to testify our love towards him. The Prophets foretel all that relates to him and his church: the Gospels narrate his life: the Acts reveal the power of his grace in the establishment of his church: the Epistles afford the fullest disclosure of his doctrines: and the Revelation sets him forth as the eternal King. Thus Christ is the substance of the Bible.

32.

The inviolability of the divine promise requires that the Gentiles should be saved; the salvation of the Gentiles requires their calling on the name of the Lord; their calling on his name requires faith; faith requires the hearing of his word; the hearing of his word requires a preacher; a preacher requires a legitimate and divine mission: therefore the inviolability of the divine promise requires a legitimate and divine mission of preachers to the Gentiles. (*Rom.* x. 13, 14, 15.)

33.

The very true beginning of wisdom is the desire of discipline; and the care of discipline is love; and love is the keeping of her laws; and the giving heed unto her laws is the assurance of incorruption; and incorruption maketh us near to God:

therefore the desire of wisdom bringeth to a kingdom. (*Wisdom of Solomon*, vi. 17—20.)

34.

An acquaintance with conic sections has been of service in determining and measuring the periodical revolutions of the heavenly bodies; an acquaintance with the courses of the heavenly bodies has given a confidence to navigation; this confidence favours commerce; commerce facilitates exchange; the facility in carrying on an interchange of the productions of human labour encourages the activity of industry; activity and industry, when duly encouraged, render the productions of the earth more abundant; this abundance greatly augments the means of subsistence, (and consequently the population,) and removes privations; men love life and abhor privations: therefore the study of conic sections is eminently useful. (*Fontenelle.*)

35.

It was said by the enemies of Themistocles, that it was not he, but his infant son, who governed the world; which they attempted to prove thus: The son of Themistocles governs his mother; his mother governs Themistocles; Themistocles governs the Athenians; the Athenians govern the Greeks; Greece governs Europe; Europe governs the world; therefore the son of Themistocles governs the world.

36.

Speech being the great bond which holds society together, and the common conduit whereby the improvements of knowledge are conveyed from one man and one generation to another; it well deserves our most serious thoughts to consider what remedies are to be found for the inconveniences arising from the abuse of words.

37.

Nunquam est utile peccare, quia semper est turpe: et quia semper est honestum virum bonum esse, semper est utile.

38.

Unjust and cruel man! whoever thou art, whether French, or English, or German, who darest to maintain that we Africans are incapable of civilization;—take up the volume of history: read thine own origin: behold the manners of thy ancestors: trace what thou wast, and what thou now art:—and say, are the savage tribes of Africa to be compared for barbarity with those Gauls whom Tacitus and Cæsar have described as covered with the skins of beasts, wanderers and vagabonds in the midst of their forests, living on the prey obtained by hunting, and armed with clubs and arrows; maintaining their idolatrous druids and offering human sacrifices; burning their children in osier baskets as holocausts devoted to their god Theutates; deifying the misletoe; plundering without pity the wretched foreigners cast by shipwreck on their shores, and unsparingly cutting the throats of their prisoners of war? (*De Vastey, a native of Hayti: Revuë Encyclopédique,* i. 534.)

39.

Flattery is highly pernicious, especially to youth: for it originates in a base desire of interest, or in intellectual weakness; it retards improvement, paralyzes emulation, and extinguishes every motive to laudable exertion.

40.

The origin of anger is pride; and who can estimate the evil of that which flows from such a poisoned source?

41.

There is no wisdom but from genius; there is no genius but from experience; there is no experience but from practice; there is no practice but from exertion; there is no exertion but impulse; there is no impulse but from choice; there is no choice but from love; there is no love but from discretion; there is no discretion but from consideration; there is no consideration but from virtue: therefore there is no wisdom but from virtue.

42.

They who brook it worst that men should tell them of their duties, when they are told of the same by a law, think very well and reasonably of it. And why? Because they presume that the law speaks with impartiality; that the law has no respect of persons; that the law is as it were an oracle proceeding from wisdom and understanding.

43.

Examples of ingratitude check and discourage voluntary beneficence; and this affords one cogent reason to prove the mischief of ingratitude.

44.

Happiness does not consist in an exemption from pain, labour, care, business, suspense, molestation, and other external evils; such a state being usually attended, not with ease, but with depression of spirits, a tastelessness in all our ideas, imaginary anxieties, and the whole train of hypochondriacal affections.

45.

Books, says Bacon, can never teach the use of books. For the student must learn by commerce with mankind to reduce his speculations to practice, and accommodate his knowledge to the purposes of life.

46.

Iterations are commonly loss of time: but there is no such gain of time as to iterate often the state of the question; for it chaseth away many a frivolous speech as it cometh forth.

47.

Cavenda est gloriæ cupiditas, eripit enim libertatem, pro quâ magnanimis viris omnis debet esse contentio.

48.

Frugality is so necessary to the happiness of the world, so beneficial in its various forms to every rank of men, from the highest of human potentates to the lowest labourer or artificer; and the miseries which the neglect of it produces are so numerous and so grievous, that it ought to be recommended with every variety of address, and adapted to every class of understanding.

49.

Nemo sapiens nisi fortis; qui fortis est idem et fidens: qui autem est fidens, is profecto non extimescit; in quem cadit ægritudo, in eundem timor; [*id est, per negationem*, qui non extimescit, in eum non cadit ægritudo;] non cadit ergo in sapientem ægritudo. (*Cic. Tusc. Qu.* iii. 7.)

50.

Under man, no creature in the world is capable of felicity and bliss. First, because their chiefest perfection consisteth in that which is best for them, but not in that which is simply best, as ours doth. Secondly, because whatsoever external perfection they tend unto, it is not better than themselves, as ours is. (*Hooker* i. 11.)

PROMISCUOUS SLYLLOGISMS

FOR EXERCISE.

THIRD SERIES.

Hypothetical Syllogisms.

1.

IF fire may be separated from a flint, then a property may be separated from its subject; but fire may be separated from a flint; therefore a property may be separated from its subject.

2.

If hatred and malice are contrary to the divine law, they ought to be avoided; but that they are so is too evident to be denied; they ought therefore to be undoubtedly avoided.

3.

If the exercise of war in defence of our country were sinful, it would either expressly or by implication be forbidden in the Scripture; but this is not the case; and consequently we infer safely that it is not sinful.

4.

On important business it is proper to consult with others; for if a man be wise and experienced, he is sensible that two heads are better than one; and if he be an idiot, he should endeavour to make up his deficiency by the wisdom of others.

5.

The virtues are either passions, faculties, or habits: they are not passions; for passions do not

depend on previous determination: nor are they faculties; for we possess faculties by nature: therefore they are habits.

6.

Every man should render himself agreeable to those with whom he is in company: for if he is their superior in rank and fortune, it becomes him to shew himself their superior also in politeness; if he is their equal, he should remember that all have an equal right to be pleased, and that he cannot expect to receive the civilities he does not give; and if he is in company with his superiors, he should avoid either offending them by an unreserved freedom of manners, or rendering them uneasy by a foolish bashfulness.

7.

If the letter w is a vowel, it can be sounded by itself; but it cannot; which is sufficient proof that it is not a vowel.

8.

If government lotteries promote the dangerous spirit of gambling, hold out temptations to idleness and extravagance, and unsettle the minds of those, in the lower orders especially, who would otherwise be industrious and useful members of the community; then those lotteries ought to be wholly abolished by a wise and Christian legislature. Now it cannot, even by their warmest supporters, be denied that such are their natural effects; and therefore *they* are by no means too severe who represent them as wholly deserving to be abolished by a wise and Christian legislature.

2.

If baptism could be justly refused to the children of Christian parents, circumcision should on the same principle have been refused to the offspring of Jewish parents. But the express command of

God proves that such refusal among the Jews would have been sinful. How then can it be thought less criminal to withhold from the children of Christians their initiatory rite, and thus to rob them of an invaluable privilege which is clearly their due.

10.

"The baptism of John, was it from heaven or of men?" .... "If we shall say, From heaven, he will say, Why then believed ye him not? But if we say, Of men, all the people will stone us; for they be persuaded that John was a prophet." (*St. Luke* xx. 4—6.)

11.

If the gas-lights emit a disagreeable smell, a sufficient reason is afforded for objecting to them; but they do not emit a disagreeable smell; therefore no such sufficient reason is afforded.

12.

O sententiam necessitate confusam! negat inquirendos ut innocentes, et mandat puniendos ut nocentes; parcit et sævit, dissimulat et animadvertit! Quid temetipsum censurâ circumvenis? si damnas, cur non et inquiris? si non inquiris, cur non et absolvis? (*Tertullian to the Emperor Trajan, who forbad that the Christians should be sought out, yet ordered that they should be punished when found.*)

13.

A general systematic reformation of the House of Commons must be of one of two sorts. It may be restoration, upon the original principles of the institution to be reformed, to the state in which it stood at some former time, and from which it is alleged to have degenerated: or, it may be a reconstruction of the institution on principles alto-

gether new. My first question to the proposer of such general reformation, therefore, is, Which of these two modes have you in view? If the answer be, Restoration to what the House of Commons was in former times; I then request that the period may be specified at which the House of Commons was, according to the reformer, in the perfection to which he wishes to restore it. If, on the other hand, the answer be, that it is intended to re-construct the House on new principles: then, I think, it is not too much to ask that these principles be clearly defined, before we are required to take a single practical step towards the abolition of the existing frame of the House of Commons. (*Report of a Speech in the House of Commons, Nov.* 24, 1819.)

14.

If the indulgence of an angry spirit renders us the scorn and sport of all about us; if it betrays us into irretrievable misconduct; if it occasions the forfeiture of the esteem of those friends whom we have most highly valued; if it becomes, on many accounts, the source of numerous and deep regrets; surely that disposition ought by every effort to be resisted and subdued.

15.

If benevolence were the whole of virtue, then in the review of our own character or that of others, our moral understanding and moral sense would be indifferent to every thing but the degrees in which benevolence prevailed; but this is far from being the case; for an act of injustice or treachery, though it should originate in a desire to benefit others, is still felt to be vicious and unjustifiable. Consequently virtue is by no means resolvable into benevolence.

16.

The sun and the earth are both spherical bodies. If therefore they were equal in size, the shadow of the earth would be cylindrical, and extend *ad infinitum*. But if so, Mars, and the other superior planets would be eclipsed by it. But this is never the case: therefore the sun and the earth are not of equal size. Again, if the earth were larger than the sun, its shadow would increase in width in proportion to its distance, and thus would occasionally eclipse the superior planets. But the earth never eclipses them: therefore it is not larger than the sun. But the earth was before proved not to be equal to the sun: therefore it is smaller than the sun.

17.

It is not easy to comprehend what could have induced an impostor to forge two such Epistles as the second and third attributed to St. John. They could not have been forged during that Apostle's life; for the imposture must have been immediately detected: and if they had been forged after his death, it is not very probable that the impostor would have made his pretended author promise at the end of each Epistle that he would shortly pay a visit to those to whom the Epistles were addressed.

18.

Τούτους ὦν τοὺς ἄνδρας (τοὺς Ἴωνας) συμβουλεύω τοι μηδεμιῇ μηχανῇ ἄγειν ἐπὶ τοὺς πατέρας· καὶ γὰρ ἄνευ τουτέων οἷοί τέ εἰμεν τῶν ἐχθρῶν κατυπέρτεροι γίνεσθαι. Ἢ γὰρ σφέας, ἢν ἕπωνται, δεῖ ἀδικωτάτους γίνεσθαι, καταδουλουμένους τὴν μητρόπολιν, ἢ δικαιοτάτους συνελευθεροῦντας. Ἀδικώτατοι μέν νυν γινόμενοι, οὐδὲν κέρδος μέγα ἡμῖν προσβάλλουσι· δικαιότατοι δὲ γινόμενοι, οἷοί τε δηλήσασθαι μεγάλως τὴν σὴν στρατιὴν γίνονται. (*Artabanus to Xerxes, Herod.* vii. 51.)

19.

The odes ascribed to Horace were composed either by him, or by some ingenious monk who intended to personate him. But for this latter hypothesis there is no authority, nor does any circumstance afford it an appearance of probability. On the contrary, no writer subsequent to the Augustan age could have maintained so great purity of Latin style; besides which, the allusions are all Roman, nor do they bear any semblance of that allegorical character which some have ascribed to them. Therefore they must have been the productions of him to whom they have been usually attributed.

20.

"Utilis est," inquis, "ira; quia contemptum effugit." Primum, ira si quantum minatur valet, ob hoc ipsum quod terribile est, et invisa est. Periculosius est autem timeri, quam despici. Si vero sine viribus est, magis exposita contemptui est, et derisum non effugit. Quid enim est iracundiâ in supervacuum tumultuante frigidius? (*Seneca.*)

PROMISCUOUS SYLLOGISMS

FOR EXERCISE.

FOURTH SERIES.

Fallacies.

1.

Παλαιός ἐστί τις ὁ λόγος οὗτος, οὗ μεμνήμεθα ὡς εἰσὶν ἐνθένδε ἀφικόμεναι ἐκεῖ, καὶ πάλιν γε δεῦρο ἀφικνοῦνται καὶ γίγνονται ἐκ τῶν τεθνεώτων. Καὶ εἰ τοῦθ' οὕτως ἔχει, πάλιν γίγνεσθαι ἐκ τῶν ἀποθανόντων τοὺς ζῶντας, ἄλλο τι ἢ εἶεν ἂν ἡμῶν αἱ ψυχαὶ ἐκεῖ; οὐ γὰρ ἄν που πάλιν ἐγίγνοντο μὴ οὖσαι. Καὶ τοῦτο ἱκανὸν τεκμήριον τοῦ ταῦτ' εἶναι, εἰ τῷ ὄντι φανερὸν γίγνοιτο ὅτι οὐδεμόθεν ἄλλοθεν γίγνωνται οἱ ζῶντες ἢ ἐκ τῶν τεθνεώτων. (*Plut. Phæd.* 15.)

2.

Justice and injustice; the greater and the less; the weaker and the stronger; the better and the worse; separation and combination; the state of becoming warm and that of becoming cold; sleeping and awaking; are reciprocally the occasions of producing each other. Therefore in all things universally, contraries are produced by their contraries. Therefore life and death are reciprocally produced by each other. Therefore as death follows life, so life must follow death. Therefore living things and living men are produced from the dead. Therefore human souls exist in Hades. (*Plut. Phæd.* 15, 16.)

3.

Quod vero sine corpore ullo deum [Plato] vult esse, ut Græci dicunt, ἀσώματον; id quale esse possit, intelligi non potest: careat enim sensu necesse est;

careat etiam prudentiâ, careat voluptate: quæ omnia unà cum deorum notione comprehendimus. (*Cic. Nat. Deor.* i. 12.)

4.

Quoniam deos beatissimos esse constat; beatus autem esse sine virtute nemo potest, nec virtus sine ratione constare, nec ratio usquam inesse nisi in hominis figurâ: hominis esse specie deos confitendum est. . . . . .

Beatos esse deos sumsisti. Concedimus. *Beatum autem sine virtute neminem esse posse.* Id quoque damus et libenter quidem. *Virtutem autem sine ratione constare non posse.* Conveniat id quoque necesse est. Adjungis, *nec rationem esse, nisi in hominis figurâ.* Quem tibi hoc daturum putas? A beatis ad virtutem, a virtute ad rationem video te venisse gradibus. A ratione ad humanam figuram quomodo accedis? Præcipitare istuc quidem est, non descendere. (*Cic. Nat. Deor.* i. 18, 32.)

5.

It is not to be wondered at that the foundation appears unsound, and the building begins to give way. For the builder was foolish enough to lay the first stone on a Friday, although he was reminded that it is always an unlucky day.

6.

Where was the Protestant religion before Luther?

7.

A miracle is a violation of the laws of nature: and, as firm and unalterable experience has established these laws, the proof against a miracle, from the very nature of the fact, is as entire as any argument from experience can possibly be imagined. (*Hume.*)

8.

My friend tells me that he suffers much from lumbago. But that complaint is completely contrary to all my experience. I have never suffered

any thing of the kind. And when he endeavours to describe his sensations, I can neither see nor feel them. I have therefore abundant evidence that my friend is mistaken, and that no such complaint exists.

9.

The blame of my misconduct is entirely to be imputed to my neighbour; for if he had not enticed me into bad society, I should never have been exposed to the snare into which I have fallen.

10.

The Bible is the most miscellaneous book in the world, and treats of the greatest variety of things; creation, deluge, chronology, civil laws, ecclesiastical institutions, nature, miracles, buildings, husbandry, sailing, physics, pharmacy, mathematics, metaphysics, and morals. To understand therefore the matter of the book a man must be able to think justly in every science and art. (*Collins in Bentley.*)

11.

The free-thinker must be a man of virtue; because by *much thinking* (here again we are tricked for *free-thinking*) men comprehend the whole compass of human life, and are convinced that, to live pleasantly, they must live virtuously. (*Bentley*, ii. 44.)

12.

Where Tertullian disputeth against the wearing of a crown or garland; (which is indifferent in itself;) to those which objecting asked, Where the Scripture saith that a man might not wear a crown? he answereth by asking, Where the Scripture saith that they may wear? And unto them replying that *it* is permitted which is not forbidden: he answereth, that *it* is forbidden which is not permitted. Wherefore it is not enough that any [action or ceremony] be not forbidden, unless there be some

word [in Scripture] which doth permit the use of them. (*T. C. in Hooker's Ec. Pol.* ii. 5.)

13.

Whereas you say that you have demonstrated against us, that Protestants divided themselves from the external communion of the visible Church; we answer, This is not the *quod erat demonstrandum.* The point you professed to prove was not that we divided ourselves from the external communion of your Church, but that we divided ourselves from the Church, and made ourselves outlaws from it: a proposition which your argument does not reach. (*Chillingworth,* ch. v. §. 52.)

14.

The reproach of *senseless,* [namely, as applied to those who called themselves free-thinkers,] he [Collins, the author of a *Discourse on Free-thinking,*] confutes with ease, by a self-evident proposition: "For men that use their understandings must have more sense than they that use them not." Very compendious, truly! But out of too much precipitation he leaves his syllogism in the lurch. He forgets to prove that every man that *uses his understanding* is (in the meaning of his book) a *free-thinker.* Without this, that same "*senseless*" will still stick close upon him; and the closer for this very syllogism. It is mere chicanery in the word. A *free-thinker,* in this *self-evident* proposition, is *any man that uses his understanding,* [as Collins had previously defined it,] that is, that *thinks* at all: a very comprehensive definition. And yet presently in the next paragraph, a *free-thinker* is but *one of a thousand;* one that *departs from the sentiments of the herd of mankind;* that is, (for he could scarce have told it us in a plainer description,) a mere *atheist,* or at least *no Christian.* Are not these two acceptations of the same word wonderfully consistent? (*Bentley's Remarks on Free-thinking,* p. ii. 944.)

THE END.